,5B

SV3-075B

Gold Star Audio

SERVICE MANUAL

for service technician

Gold Star Co., Ltd.

STEREO CASSETTE RECORDER with AM/FM STEREO

TSR-640 (FM/SW/MW/LW)

TSR-645 (FM/SW_2/SW_1/MW)

SPECIFICATIONS

This specifications are apply to model TSR-640/TSR-645 and may be changed for improvement of performance without notice.

Radio section

Circuit system ..... Superheterodyne system
Antenna
FM/SW_2/SW .....Telescopic ant.
SW_1/MW/LW ..... Built-in ferrite bar ant.
o AM (SW_2/SW_1/SW/MW/LW) band
Frequency range
SW_2 ..... 7 – 22 MHz
SW_1 ..... 2.3 – 7 MHz
SW ..... 6 – 18 MHz
MW ..... 515 – 1650 KHz
LW ..... 150 – 350 KHz
Intermediate frequency ..... 455 (465) KHz
Sensitivity Max (Usable)
SW_2 ..... 35 (45) dB
SW_1 ..... 46 (56) dB
SW ..... 35 (45) dB
MW ..... 46 (56) dB
LW ..... 54 (60) dB
Signal to noise ratio ..... 40 dB
Image rejection
SW_2 ..... 5 dB
SW_1 ..... 10 dB
SW ..... 5 dB
MW ..... 40 dB
LW ..... 30 dB
o FM band
Frequency range ..... 88 – 108 MHz
Intermediate frequency ..... 10.7 MHz
Sensitivity Max (usable) ..... 2 (4) μV
Signal to noise ratio ..... 54 dB
Stereo separation ..... 36 dB

Cassette section

Circuit system ..... 4 track 2 channel stereo
Recording system ..... AC bias (60 kHz)
Winding time (F.F & Rew) ..... 90 sec
Wow & flutter ..... 0.15 (WRMS)
Frequency response
P/B ..... Low noise tape : 10 – 8000 Hz
CrO_2 tape : 100 – 10000Hz
Metal tape : 100 – 12000Hz
REC/PB ..... Low noise tape: 100–6300Hz
CrO_2 tape : 100–8000Hz
Metal Tape : 100–10000Hz
Signal to noise ratio ..... P/B 46 dB
REC/PB 40 dB
Stereo separation ..... 40 dB

General

Output power
Max ..... 5.5 W + 5.5 W
10% T.H.D ..... 4.5 W + 4.5 W
Power source
AC ..... Refer to rear case
DC ..... Battery 12V (eight "D" size)
External adapter 12V
Power consumption ..... 28 W
Semi-conductors ..... 7IC, 26TR, 18 diode, 12LED
Speakers ..... Woofer: Dome type 16cm
(3.2 Ω) x 2
Tweeter: Dome type 5 cm
(4Ω) x 2
Input terminal
Mic jacks (R/L) ..... input sens. 1mV
input impedance 200–600 Ω
Mixing Mic jacks ..... input impedance 10 kΩ
Line in Jacks (R/L) and Din Socket
input sens. 20 mV
input impedance 40 KΩ
Output terminal
External speaker jacks (R/L)
load impedance 2.3 – 8 Ω
Line Out jacks (R/L) ..... Standard output level 500 mV
Output impedance 10KΩ
Headphone jack ..... load impedance 8 – 150 Ω
Weight ..... 6.1 kg (without batteries)
Dimensions ..... 484(W) x 289(H) x 152(D) mm

Printed in Korea Mar., 1982

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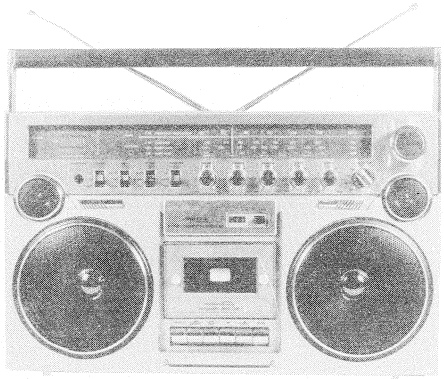
SERVICE MANUAL

for service technician



Gold Star Co., Ltd.

STEREO CASSETTE RECORDER with AM/FM STEREO

TSR-640 (FM/SW/MW/LW)

TSR-645 (FM/SW_2/SW_1/MW)

SPECIFICATIONS

This specifications are apply to model TSR-640/TSR-645 and may be changed for improvement of performance without notice.

Radio section

Circuit system ..... Superheterodyne system
Antenna
FM/SW_2/SW .....Telescopic ant.
SW_1/MW/LW ..... Built-in ferrite bar ant.
o AM (SW_2/SW_1/SW/MW/LW) band
Frequency range
SW_2 ..... 7 — 22 MHz
SW_1 ..... 2.3 — 7 MHz
SW ..... 6 — 18 MHz
MW ..... 515 — 1650 KHz
LW ..... 150 — 350 KHz
Intermediate frequency ..... 455 (465) KHz
Sensitivity Max (Usable)
SW_2 ..... 35 (45) dB
SW_1 ..... 46 (56) dB
SW ..... 35 (45) dB
MW ..... 46 (56) dB
LW ..... 54 (60) dB
Signal to noise ratio ..... 40 dB
Image rejection
SW_2 ..... 5 dB
SW_1 ..... 10 dB
SW ..... 5 dB
MW ..... 40 dB
LW ..... 30 dB
o FM band
Frequency range ..... 88 — 108 MHz
Intermediate frequency ..... 10.7 MHz
Sensitivity Max (usable) ..... 2 (4) μV
Signal to noise ratio ..... 54 dB
Stereo separation ..... 36 dB

Cassette section

Circuit system ..... 4 track 2 channel stereo
Recording system ..... AC bias (60 kHz)
Winding time (F.F & Rew) ..... 90 sec
Wow & flutter ..... 0.15 (WRMS)
Frequency response
P/B ..... Low noise tape : 10 — 8000Hz
CrO_2 tape : 100 — 10000Hz
Metal tape : 100 — 12000Hz
REC/PB ..... Low noise tape: 100—6300Hz
CrO_2 tape : 100—8000Hz
Metal Tape : 100—10000Hz
Signal to noise ratio ..... P/B 46 dB
REC/PB 40 dB
Stereo separation ..... 40 dB

General

Output power
Max ..... 5.5 W + 5.5 W
10% T.H.D ..... 4.5 W + 4.5 W
Power source
AC ..... Refer to rear case
DC ..... Battery 12V (eight "D" size)
External adapter 12V
Power consumption ..... 28 W
Semi-conductors ..... 7IC, 26TR, 18 diode, 12LED
Speakers ..... Woofer: Dome type 16cm
(3.2 Ω) x 2
Tweeter: Dome type 5 cm
(4Ω) x 2
Input terminal
Mic jacks (R/L) ..... input sens. 1mV
input impedance 200—600 Ω
Mixing Mic jacks ..... input impedance 10 kΩ
Line in Jacks (R/L) and Din Socket
input sens. 20 mV
input impedance 40 KΩ
Output terminal
External speaker jacks (R/L)
load impedance 2.3 — 8 Ω
Line Out jacks (R/L) ..... Standard output level 500 mV
Output impedance 10KΩ
Headphone jack ..... load impedance 8 — 150 Ω
Weight ..... 6.1 kg (without batteries)
Dimensions ..... 484(W) x 289(H) x 152(D) mm

Printed in Korea Mar., 1982

To service technician

The service manual contains detailed service information for Model TSR-640 and TSR-645, with the exception of radio band function.

The basic difference between Model TSR-640 and TSR-645 is radio band.
For example:
Model TSR-640 have the functions of FM, SW, MW and LW.
Model TSR-645 have the functions of FM, SW1, SW2, and MW.
Illustration of the model appears on front cover.

Please give attention to next caution.
The followings are the safety servicing guidelines for all audio amplifiers and radio receivers.
Service work should be performed only after you are familiar with all of the following safety guide.
To do otherwise increases the risk of potential hazards and injury to the user.

Safety guide

1. Be sure that all components are positioned in such a way to avoid possibility of adjacent components shorts. This is especially important on those chassis which are transported to and from the repair shop.
2. Always replace all protective devices such as insulators and barriers after working on a receiver.
3. Check for frayed insulation on wires including the AC-cord. Also check across-the-line components for damage and replace if necessary.
4. All fuses and certain resistors and capacitors which are of the flameproof type must be replaced with exact same types to prevent potential fire hazard.
5. After re-assembly of the-set always perform an AC-leakeage test on the exposed metallic parts of the cabinet such as the knobs, antenna terminal, etc. to be sure the set is safe to operate without danger of electrical shock.

To order repair parts

Part orders must contain;
1. Model Number – found on front cover in this service manual.
2. Part Number, Description and Quantity.

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OPERATING CONTROLS

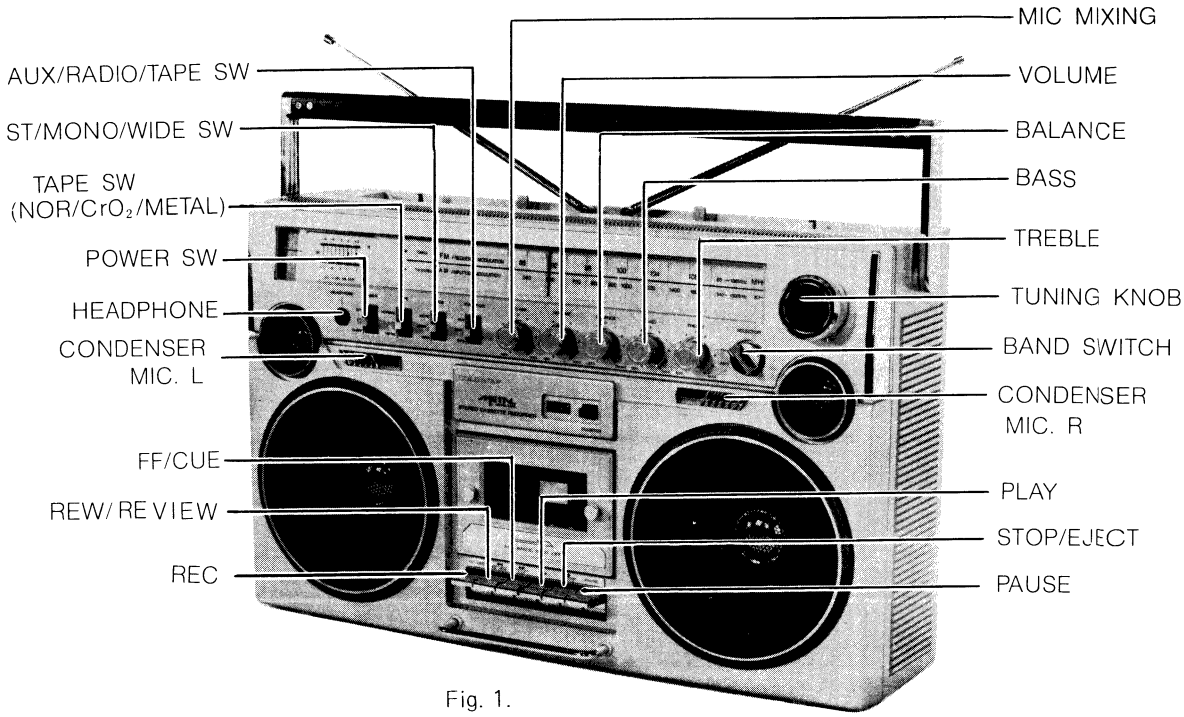


Fig. 1.

DISASSEMBLY INSTRUCTIONS

1. To remove Front case

(1) Remove screws Ⓐ (See Fig. 2)

(2) Pull out knobs (Ⓑ Ⓒ & Ⓓ) and remove screws Ⓔ to take out the cassette cover. (See Fig. 3)

(3) Pull out the front case slightly. Remove connectors CN002 and CN901 for serviceable work. (See Fig. 4)

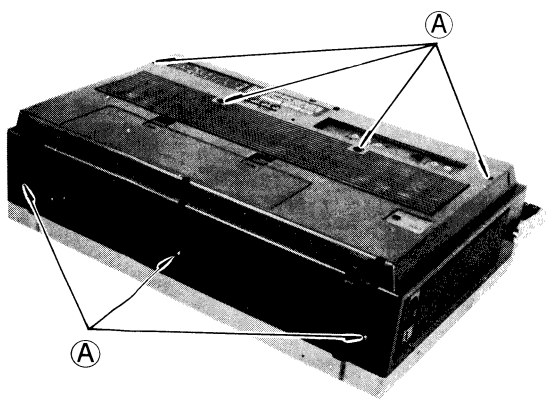


Fig. 2.

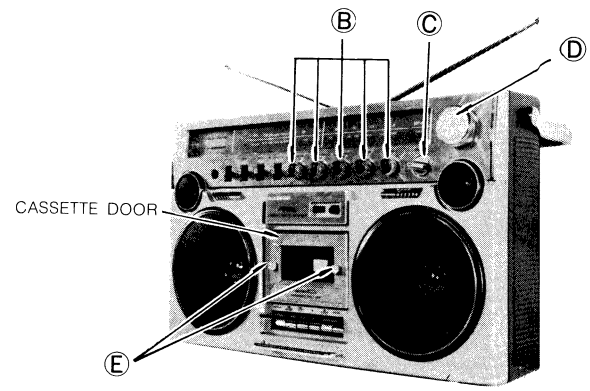


Fig. 3.

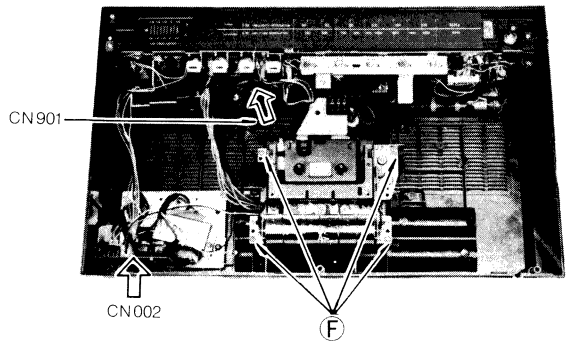


Fig. 4.

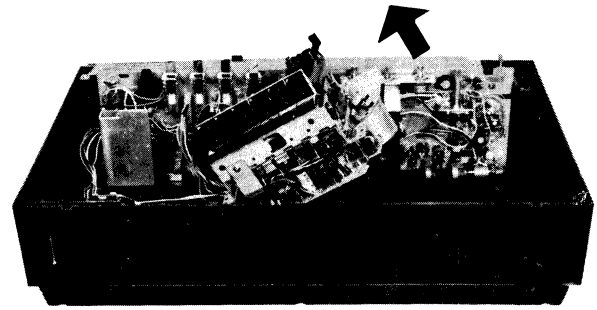


Fig. 5.

2. To remove Deck mechanism

(1) Remove screws Ⓕ (See Fig. 4)

(2) Lift it up to direction of an arrow. (See Fig. 5)

3. To remove Main PWB

Remove screws Ⓖ (See Fig. 6)

4. To remove Level meter PWB

(1) Remove screws Ⓗ to take out the scale plate. (See Fig. 6)

(2) Remove scres Ⓘ. (See Fig. 7)

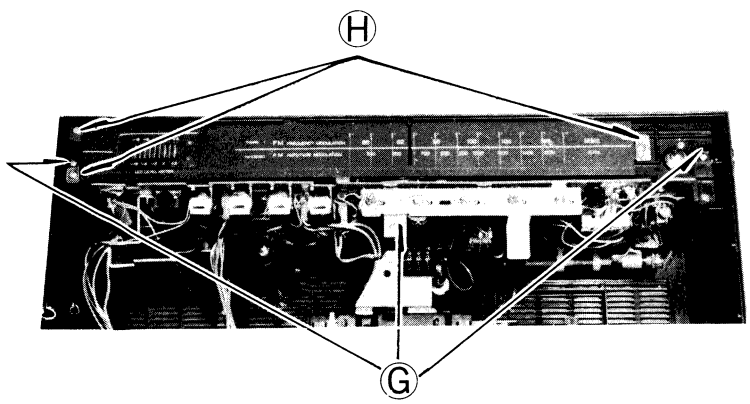


Fig. 6.

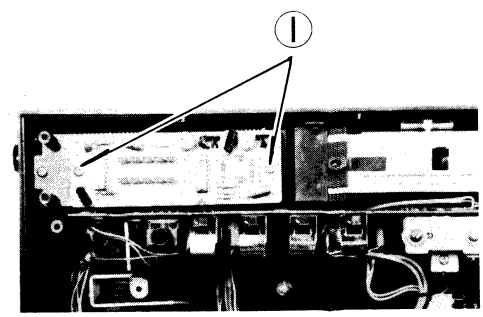


Fig. 7.

DIAL CORD ARRANGEMENT

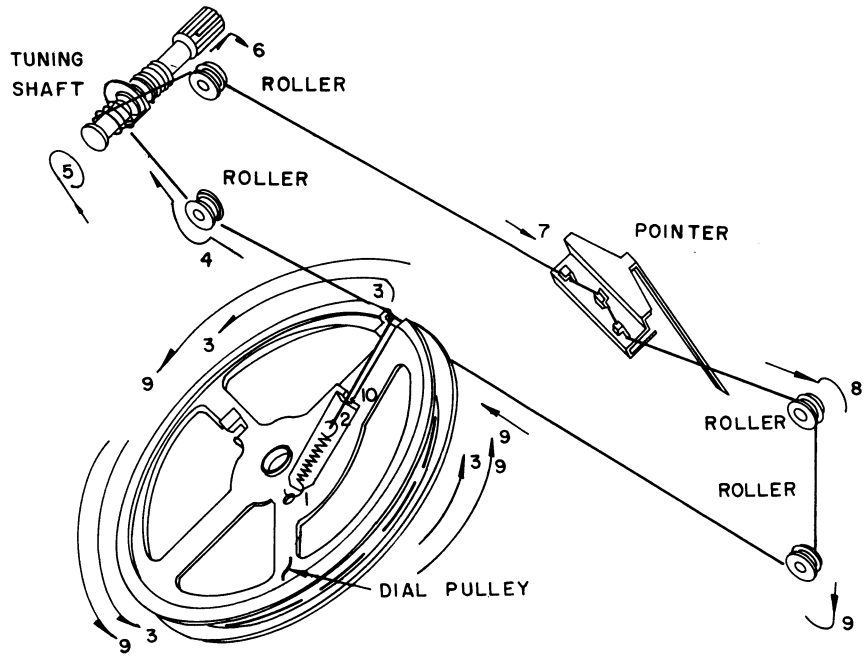


Fig. 8

Set the varicon to minimum frequency and string the cord by following the number sequence order as shown in Fig. 8.

ALGNMENT INSTRUCTIONS

This cassette radio has been aligned at the factory and normally will not require further adjustment.
As a result, it is not recommended that any attempt is made to modificate any circuit. If any parts are replaced or if anyone tampers with the adjustment, realignment may be necessary.

Test equipment required

1. AM/FM signal generator
2. IF sweep generator (10.7 MHz) for FM
3. IF sweep generator (455 kHz or 465 kHz) for AM (SW_2, SW_1, MW and LW)
4. Standard dummy antenna for FM & SW_2
5. Standard loop antenna for AM (SW_1, MW and LW)
6. VTVM
7. Oscilloscope
8. Frequency counter
9. Audio signal generator
10. Test tapes
    a) MTT-114 (10kHz)
    b) MTT-112B (1kHz)
    c) MTT-501 (Blank tape)

CASSETTE ALIGNMENT

Tape head and capstan cleaning

1. Periodically clean the tape head, capstan drive shaft and other tape handling surfaces to insure proper tape handling and optimum frequency response.
2. Use a cotton swab lipped in head cleaner or denatured alcohol to clean all tape handling surfaces. Wipe dry.

Tape head demagnetization

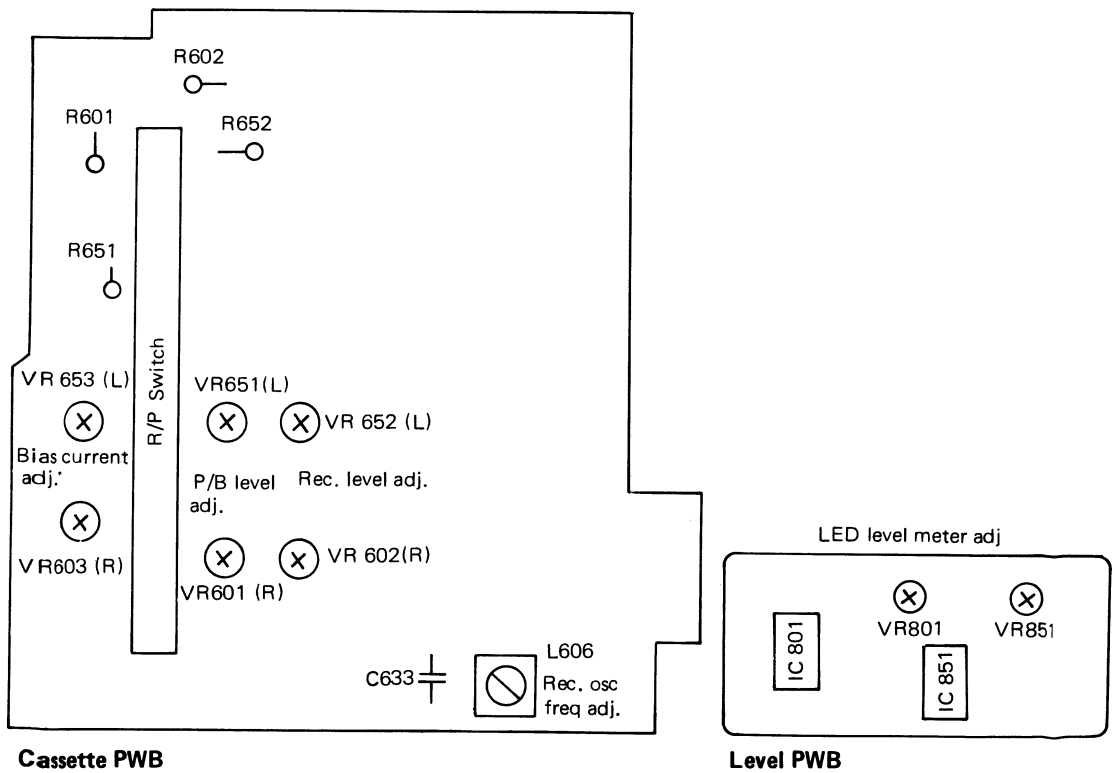
When servicing tape unit, do not use magnetized screwdrivers or wrenches near the tape head since they can magnetize the head.

A magnetized head will result in loss of high frequency response and increased noise.

Head adjustment

Head adjustment is normally required when the head is replaced or for cases of cross-talk and poor high frequency response.

Adjustment and test points



Cassette PWB **Level PWB**

Fig. 9

ALIGNMENT CHART

Step	Item	Condition	Input signal	Procedure	Output test point	Remarks
1	R/P head adjustment	Tape selector switch: normal	MTT-114 (10KHz,-10dB)	1) Playback the test tape 2) Adjust the azimuth adjusting screw.	Line-out by VTVM	VTVM should read maximum output. The difference between R and L should be within 2dB.
2	Playback Level		MTT-112B (1 kHz, 0dB)	1) Playback the test tape 2) Adjust the semi-fixed resistors VR601(R), VR651(L).	Line-out by VTVM	VTVM should read 550mV.
3	Bias frequency adjustment	Tape selector switch:normal	Blank tape	1) Insert blank tape and activate RECORD 2) Adjust oscillator coil L606.	Erase head by frequency counter	Frequency counter should read 60KHz.
4	Bias current adjustment	Tape selector switch:normal	Blank tape	1) Insert blank tape and activate RECORD mode. 2) Adjust the semi-fixed resistors VR603(R), VR653(L).	R601(R), R651 (L) both ends by VTVM.	VTVM should read 4mV.
5	Signal current adjustment	Tape selector switch:normal	1KHz, 10mV audio signal thru Rx1 (Rx2)	1) Set in RECORD mode and apply the signal. 2) Adjust the semi-fixed resistors VR602(R), VR652(L).	R601 (R), R651 (L) both ends by VTVM	VTVM should read 0.53mV.
6	Level meter adjustment		1KHz, 550mV audio signal thru R and C in series	1) Set in RECORD mode and apply the signal. 2) Adjust the semi-fixed resistors VR801(R), VR851(L)	LED level meter indication	Level meter should indicate 4th mark (0 dB)

Equipment Arrangement for Cassette Alignment.

Step 1.2

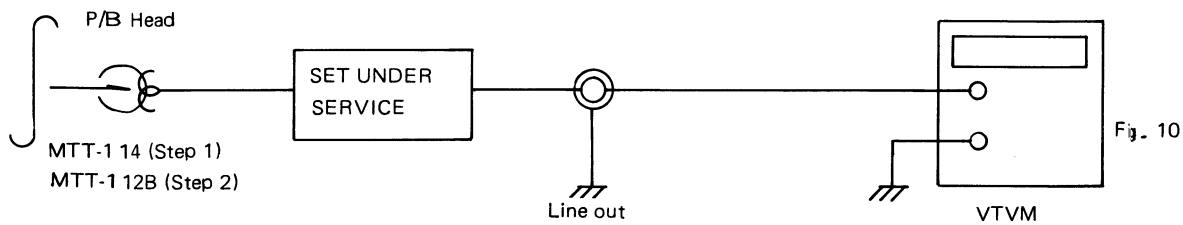


Fig. 10

Step 3.

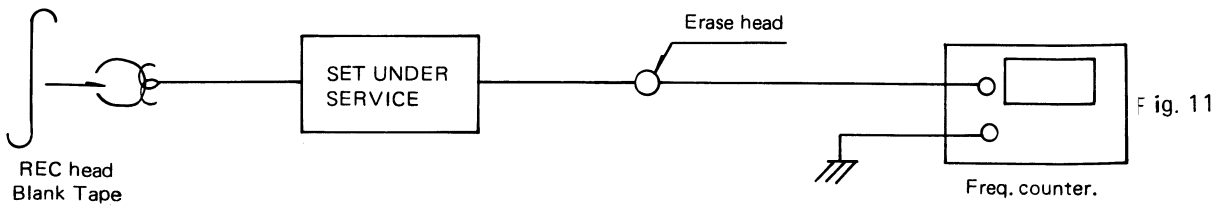


Fig. 11

Step 4.

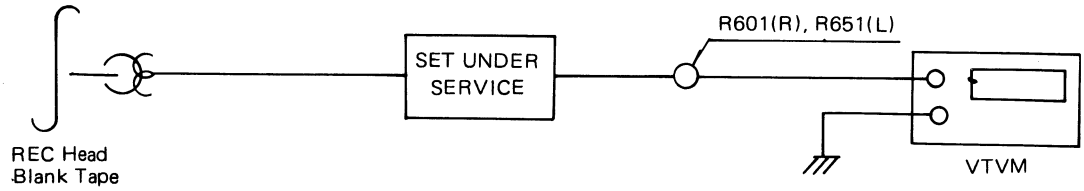


Fig. 12.

Step 5.

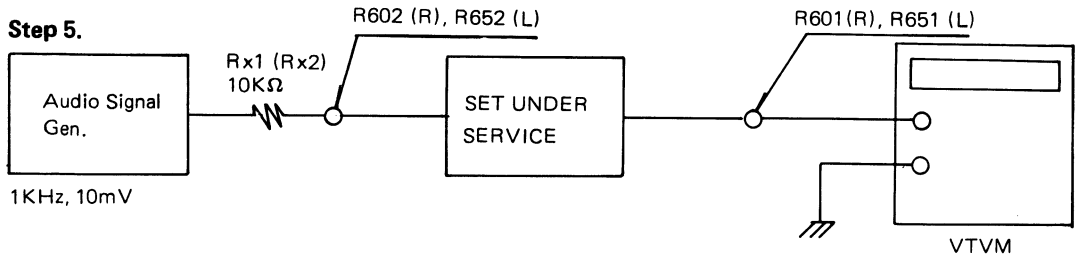


Fig. 13

Step 6.

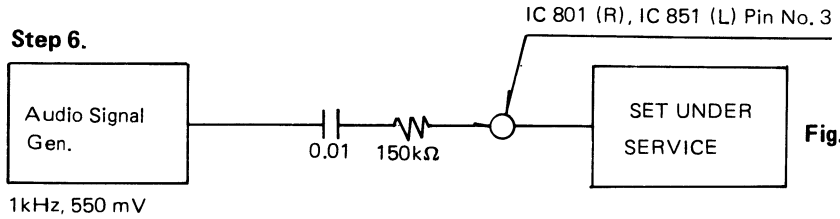
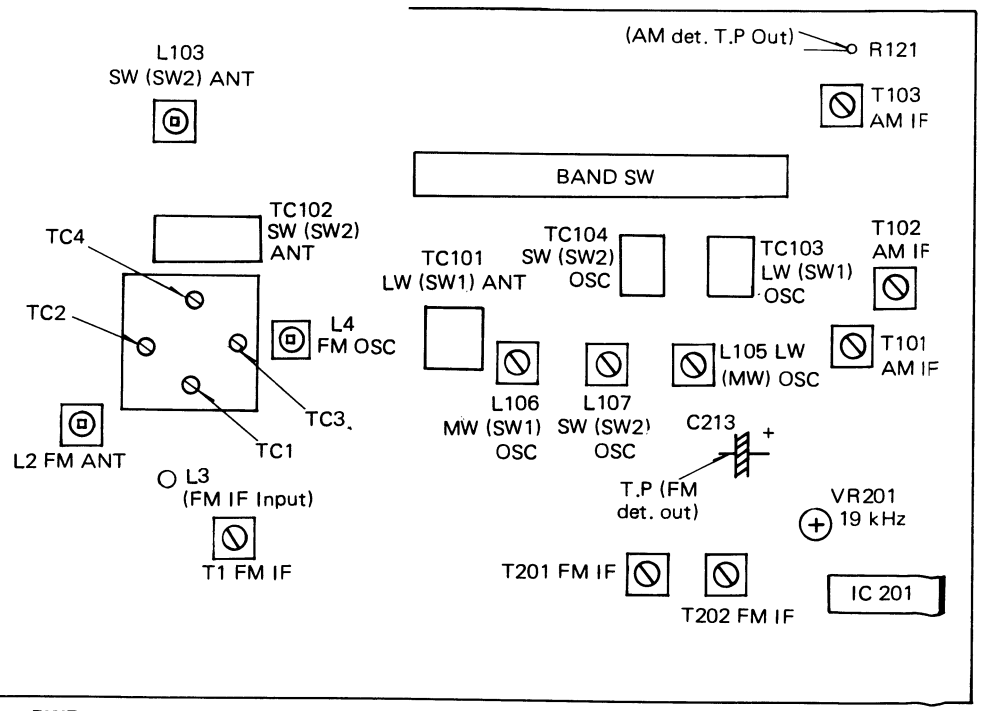


Fig. 14

RADIO ALIGNMENT

Adjustment and test points



Main PWB

Fig. 15

AM ALIGNMENT CHART

Step	Item TSR-640 (TSR-645)		Instrument & Frequency	Test Point		Dummy Ant.	Dial Setting	Adjustment Point TSR-640 (TSR-645)	Purpose
				Input Terminal	Ouptut Terminal				
1	AM-IF		AM IF sweep generator and oscilloscope or	AM IF Input	Detector output	Generator output Probe "A"	Tuning-Gang counter-clockwise (Lowest freq.)	T101 T102 T103	Adjust for the scope pattern with specified marker (IF freq.) as illustrated in fig. 17. (Note 1)
2	MW Oscillator	a	AM SSG 515KHz (400Hz, 30% Mod) and VTVM	MW wave magnet ant.	Speaker output or detector output	None	Tuning-Gang counter-clockwise (Lowest freq.)	L106 (L105)	Adjust for maximum gain.
		b	AM SSG 1650KHz (400Hz, 30% Mod) and VTVM				Tuning-Gang clockwise (Highest freq.)	TC4	
		c	Repeat the above item 2-(a), (b) for minimum change.						
3	MW Tracking	a	AM SSG 600 KHz (400Hz, 30% Mod) and VTVM	MW wave magnet ant.	Speaker output terminal or detector Output	None	Tune to signal	L102 MW ant. coil	Adjust for maximum gain.
		b	AM SSG 1400 KHz (400Hz, 30% Mod) and VTVM					TC3	
		c	Repeat the above item 3-(a), (b) for minimum change						
4.	LW (SW_1) OSC	a	AM SSG 150 KHz (2.3 MHz) (400Hz, 30% Mod) and VTVM	LW (SW_1) wave magnet ant.	Speaker output terminal or detector output	None	Tuning gang fully counter clockwise (Lowest fre.)	L105 (L106)	Adjust for maximum gain.
		b	AM SSG 350 KHz (7,0MHz) (400Hz, 30% Mod) and VTVM				Tuning gang fully clockwise (Highest fre.)	TC103	
		c	Repeat the above item 4-(a), (b) for minimum change.						

Step	Item TSR-640 (TSR-645)		Instrument & Frequency	Test Point		Dummy Ant.	Dial Setting	Adjustment Point	Purpose
				Input Terminal	Ouptut Terminal				
5	LW (SW_1) Tracking	a	AM SSG 160 KHz (2.7 MHz) (400 Hz, 30% Mod) and VTVM	LW (SW_1) wave magnet ant.	Speaker Output terminal or detector output	None	Tune to signal	L102 LW ant. Coil	Adjust for maximum gain.
		b	AM SSG 330 KHz (6.3MHz) (400 Hz, 30% Mod) and VTVM					TC101	
		c	Repeat the above item 5-(a), (b) for minimum change.						
6	SW (SW_2) OSC	a	AM SSG 6MHz (7MHz) (400Hz, 30% Mod) and VTVM	ANT input	Sp. output ter. or detector output	SW dummy ant (Probe "C")	Tuning gang fully counter clockwise (Lowest fre.)	L107	Adjust for maximum gain.
		b	AM SSG 18MHz (22MHz) (400Hz, 30% Mod) and VTVM				Tuning gang fully clockwise (Highest fre.)	TC104	
		c	Repeat the agove item 6-(a), (b) form munimum change.						
7	SW (SW_2) Track-ing	a	AM SSG 6.5MHz (8MHz) (400 Hz, 30% Mod) and VTVM	Ant input	Speaker output ter. or detector output	SW dummy ant. (Probe "C")	Tune to signal	L103	Adjust for maximum gain.
		b	AM SSG 16 MHz (20MHz) (400 Hz, 30% Mod) and VTVM					TC102	
		c	Repeat the above item 7-(a), (b) for minimum change.						

FM ALIGNEMNT CHART

Step	Item		Instrument & Frequency	Test Point: Input Terminal	Test Point: Ouptut Terminal	Dummy Ant.	Dial Setting	Adjustment Point	Purpose
1	FM-IF		FM IF Sweep Generator and oscilloscope or FM IF generating	FM-IF Input	FM Det Output	Generator Output probe "A"	Tuning Gang fully counter-clockwise (Lowest Fre.)	T1. T201	Adjust for scope Pattern with specified marker (10.7 MHz) as illustrated in Fig. 19 & 20 (note 2, 3)
	S-Curve							T202	
2	FM Oscilla-tor	a	FM SSG 87 MHz (400Hz 22.5 KHz Deviation) and VTVM	Ant Input	Speaker Output Terminal	Gernator Output Probe "B"	Tuning Gang fully counter-clockwise (Lowest fre.)	L4	Adjust for maximum gain.
		b	FM SSG 109 MHz (400Hz, 22.5KHz Deviation) and VTVM	Ant Input	Speaker Output Terminal	Generator Output Probe "B"	Tuning Gang fully clockwise (Highest fre.)	TC1	Adjust for maximum gain.
		c	Repeat the above item 2-(a), (b) for minimum change.						
3	FM Track-ing	a	FM SSG 90 MHz (400Hz, 22.5KHz Deviation) and VTVM	Ant Input Terminal	Speaker Output Terminal	Generator Output Probe "B"	Tune to signal	L2	Adjust for maximum gain.
		b	FM SSG 106 MHz (400Hz, 22.5KHz Deviation) and VTVM	Ant Input Terminal	Speaker Output Terminal	Generator Output Probe "B"	Tune to signal	TC2	Adjust for maximum gain.
		c	Repeat the above item 3-(a), (b) for minimum change.						

FM MULTIPLEX ALIGNMENT

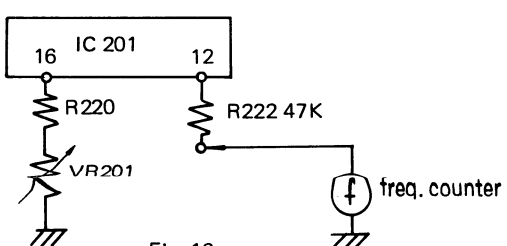


Fig. 16.

Adjustment	Remarks
VR 201 (10K-B)	Frequency counter should read 19 KHz ± 0.1 kHz

Note 1.: Adjust T101, T102 and T103 to get maximum gain and symmetry in IF response as shown in Fig. 17.

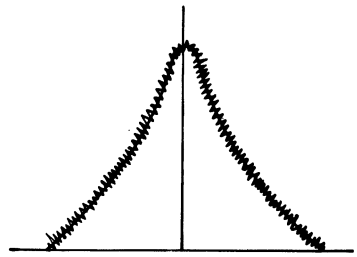


Fig. 17

IF response for weak input signal

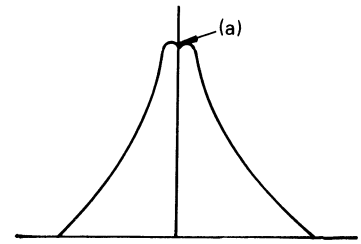


Fig. 18

IF response for strong input signal.

After adjust IF response for weak input signal, supply strong input signal and also adjust T101, T102 and T103 to make part (a) flat as shown in Fig. 18.

Note 2.: Adjust output of sweep generator so that noise appears on IF-curve as shown in Fig. 19 below and adjust T1, T201 for maximum indication.

Note 3.: Adjust T202 to be IF-curve into S-curve (See Fig. 20) and adjust T202 so that declined part of S-curve has to be just linear.

If ceramic filter is used in RF part, adjust T202 so that part (A) and part (B) are symmetrical on either side of vertical line, because the marker of 10.7MHz on sweep generator is not on the center of S-curve.

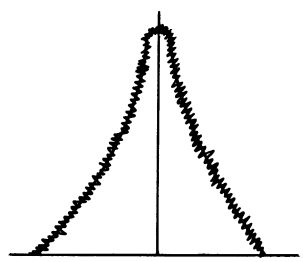


Fig 19

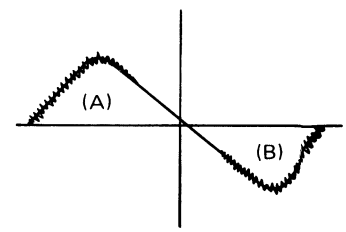
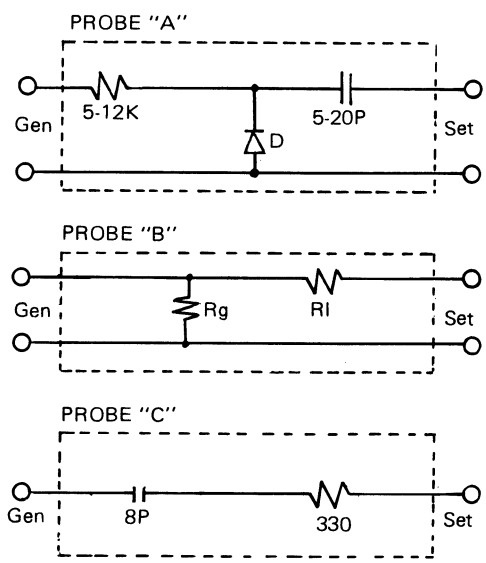


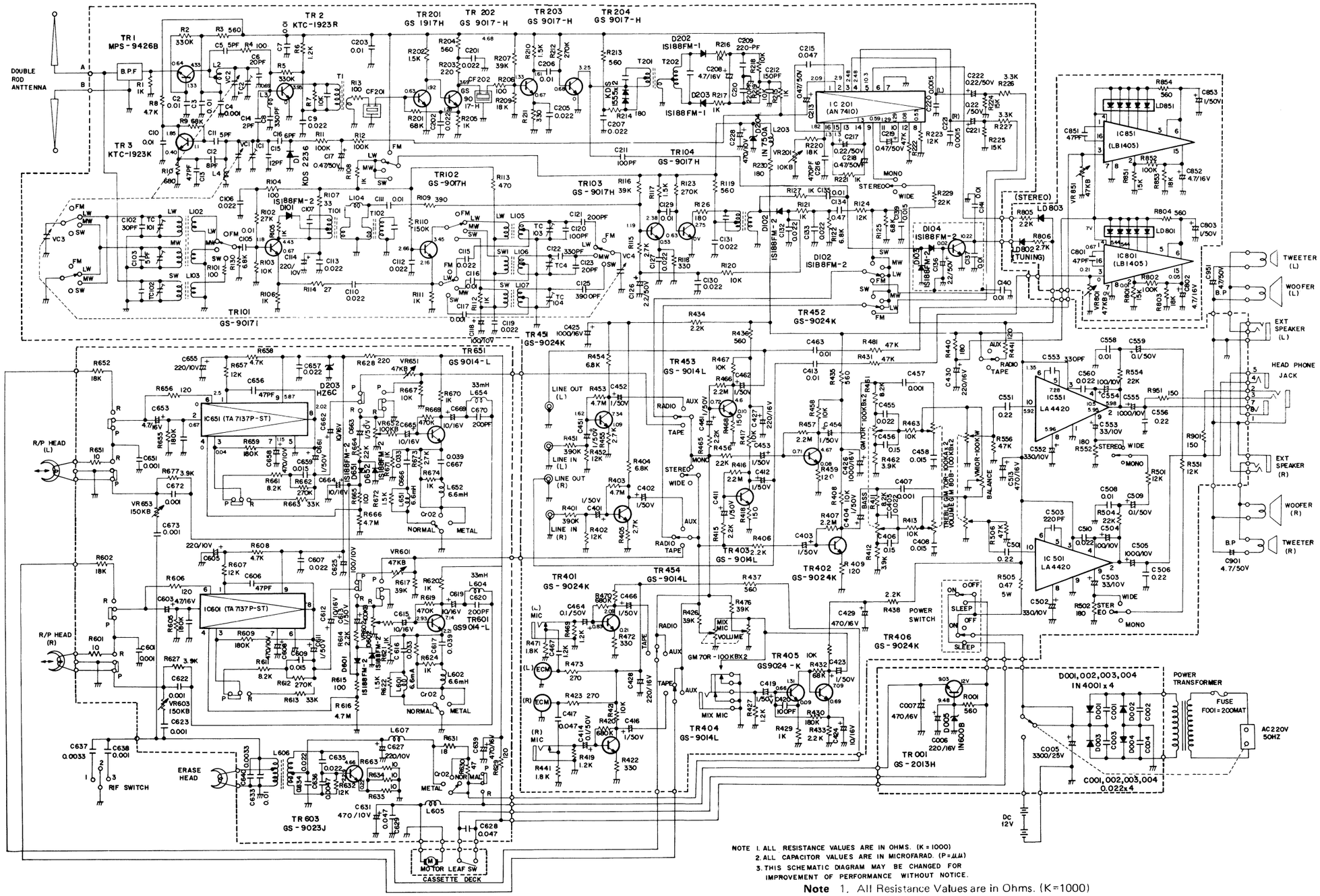
Fig. 20



Fg: FM SSG Output

RI: $75-\frac{2}{Rg}$

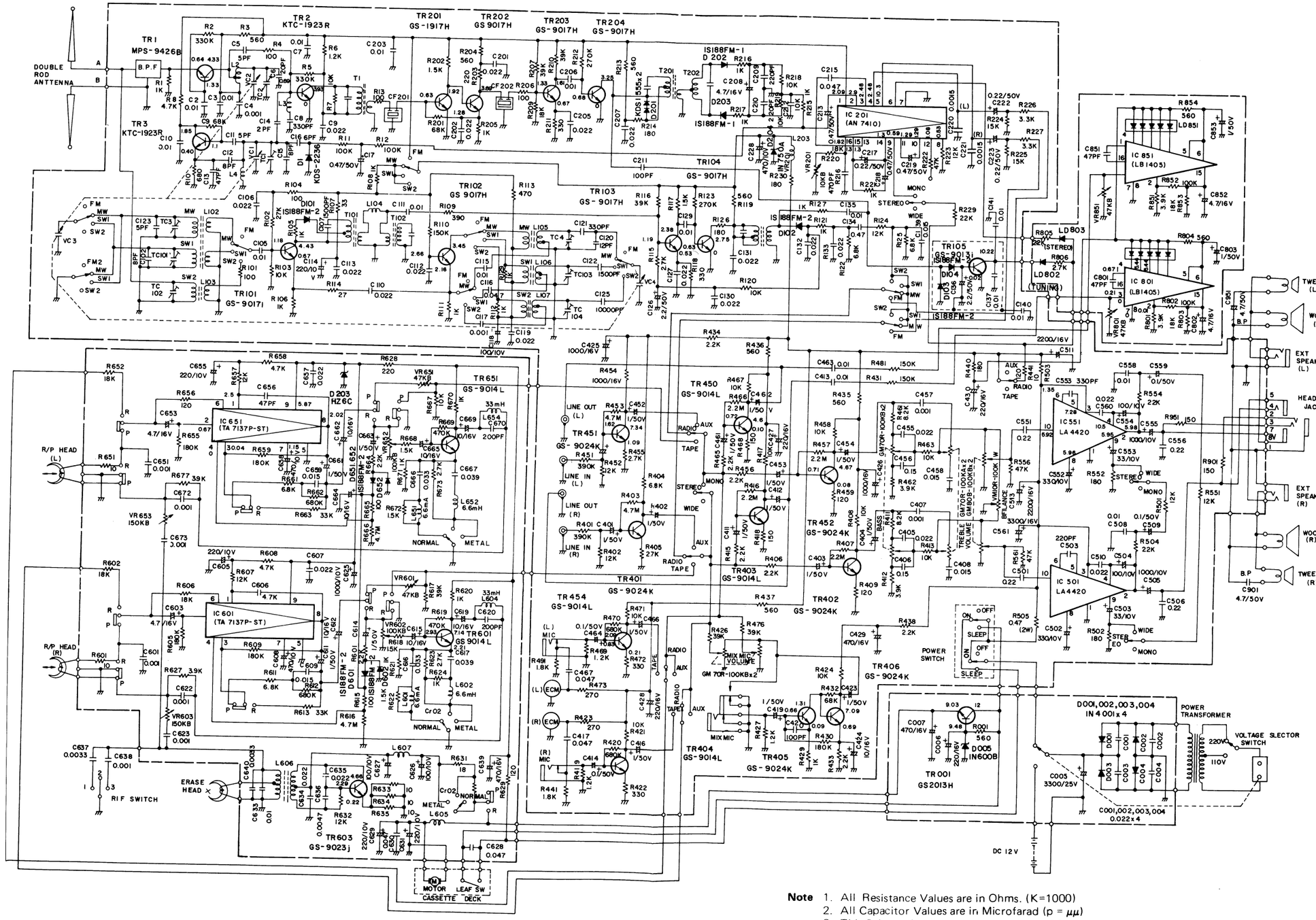
SCHEMATIC DIAGRAM (MODEL TSR-640)



NOTE 1. ALL RESISTANCE VALUES ARE IN OHMS. (K = 1000)
2. ALL CAPACITOR VALUES ARE IN MICROFARAD. (P=μμ)
3. THIS SCHEMATIC DIAGRAM MAY BE CHANGED FOR IMPROVEMENT OF PERFORMANCE WITHOUT NOTICE.

Note 1. All Resistance Values are in Ohms. (K=1000)
2. All Capacitor Values are in Microfarad (p = μμ)
3. This Schematic diagram may be changed for improvement performance without notice.

SCHEMATIC DIAGRAM (MODEL TSR-645)

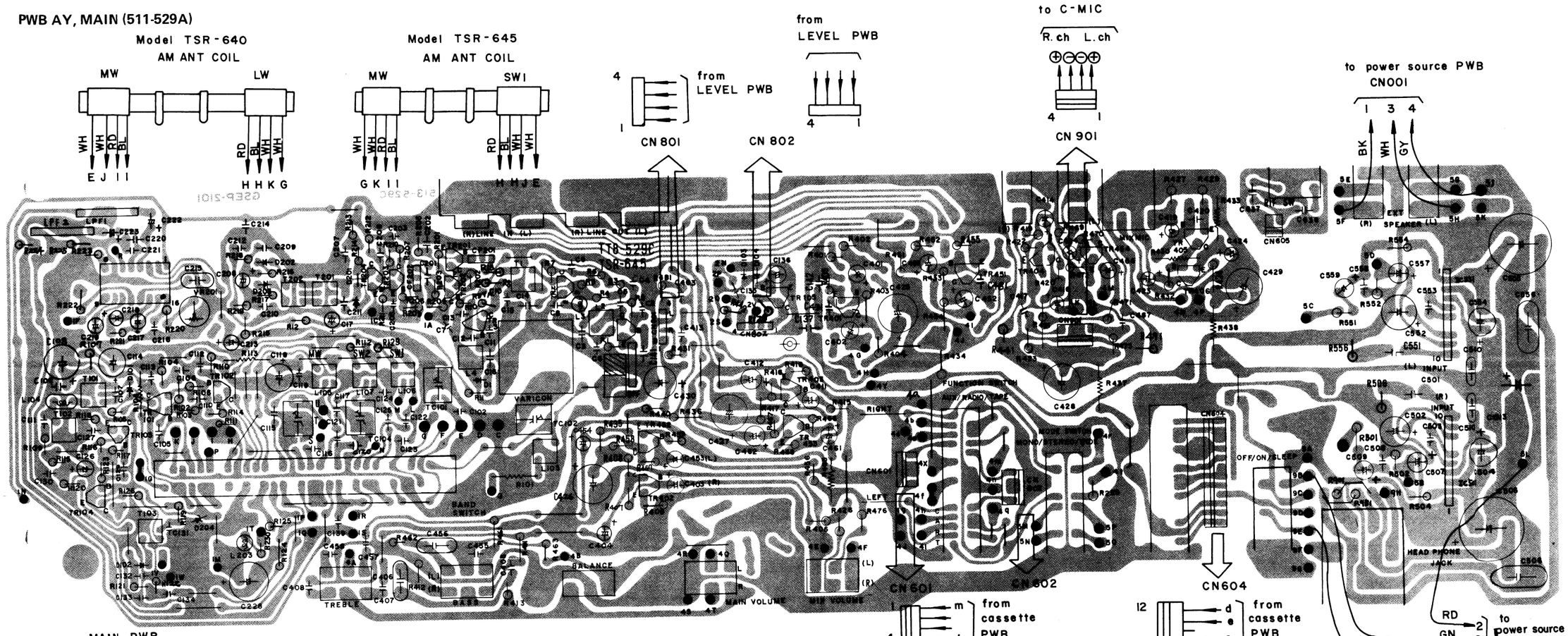


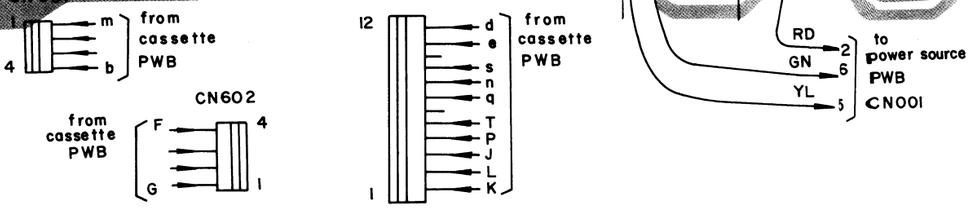
Note 1. All Resistance Values are in Ohms. (K=1000)
2. All Capacitor Values are in Microfarad (p = μμ)
3. This Schematic diagram may be changed for improvement of performance without notice.

ELECTRICAL PARTS LOCATION AND WIRING

This circuity pattern and printing may be made a little of difference with the set under service.
When servicing the set, please make sure of it.

PWB AY, MAIN (511-529A)





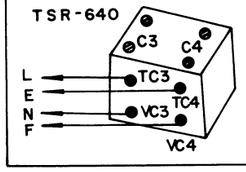
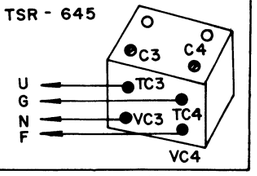
WIRING CONNECTION I

1. PVC wire	2. Shield wire
1F-4r , 5C-5P 5E-9H , 5D-5N 5G-9F , 5B-5Q 2S-4F 4f-4t 5A-5M CN802(2)-4r	4G.4H - 4b.4a 4I.4J - 4h.4g 4N.4P - 4E.4F 4S.4T - 4W.4X 4Q .4R - 4V.4U 4K.4L.4M-4m.4n.4q

WIRING CONNECTION II

1. PVC wire	2. Shield wire
4A-4B 1G-1N 1A-1G R-2V P-Q C141-2P 1T-4Y M-S L-T (only for TSR-645)	C2I1-D103 2Q -TR104(C) 1P.TQ-4e.4O 1R.1S-4I.4j

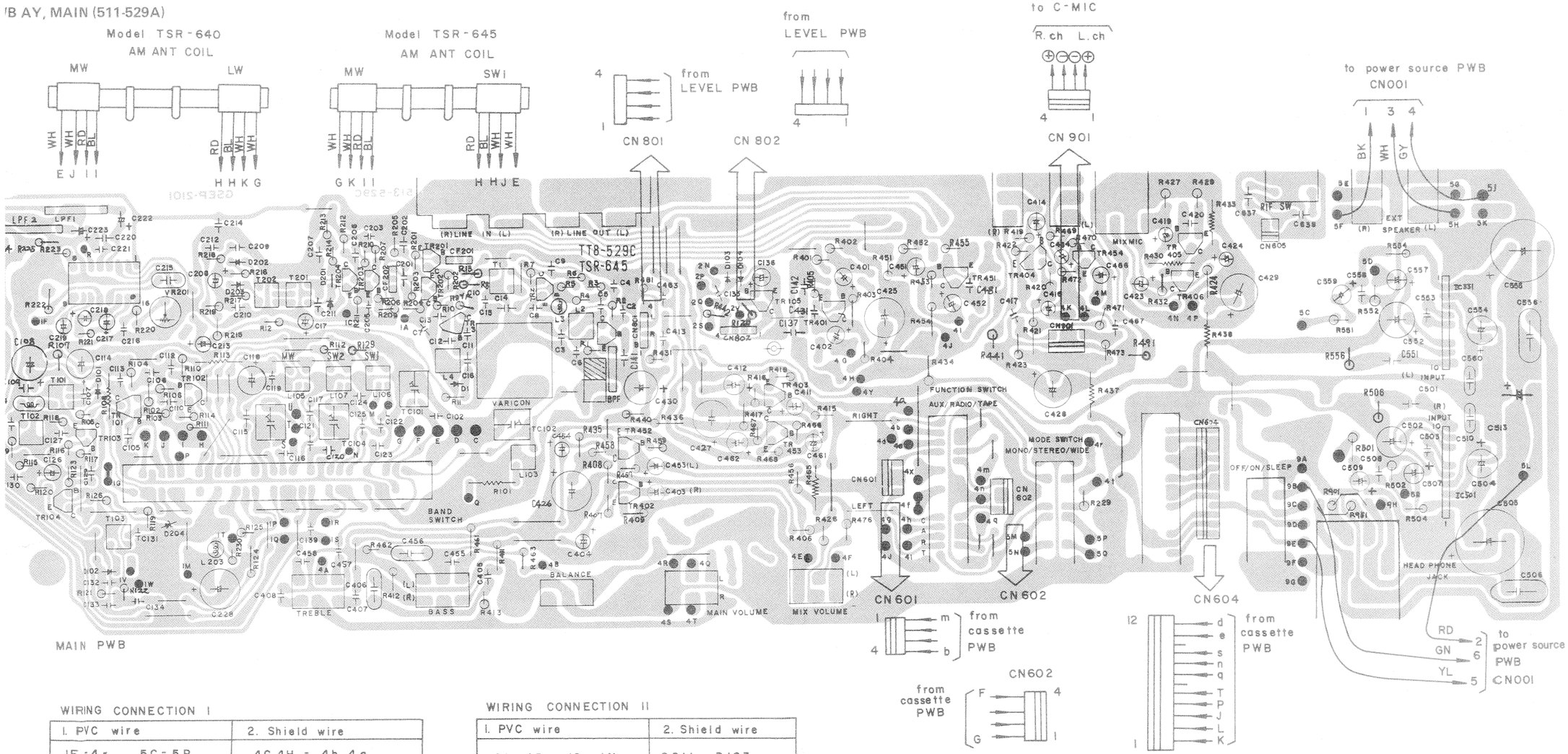
VARICON WIRING

MODEL : TSR-640	MODEL : TSR-645
	

ELECTRICAL PARTS LOCATION AND WIRING

is circuity pattern and printing may be made a little of difference with the set under service.
nen servicing the set, please make sure of it.

'B AY, MAIN (511-529A)



MAIN PWB

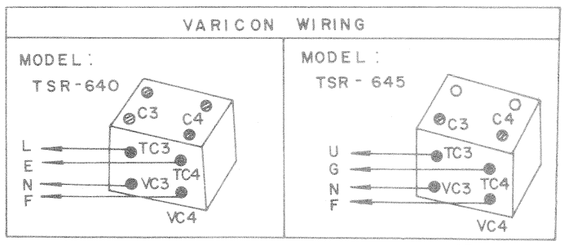
WIRING CONNECTION I

1. PVC wire	2. Shield wire
1F-4r , 5C-5P 5E-9H , 5D-5N 5G-9F , 5B-5Q 2S-4F 4f-4t 5A-5M CN802(2)-4r	4G.4H - 4b.4a 4I.4J - 4h.4g 4N.4P - 4E.4F 4S.4T - 4W.4X 4Q .4R - 4V.4U 4K.4L.4M-4m.4n.4q

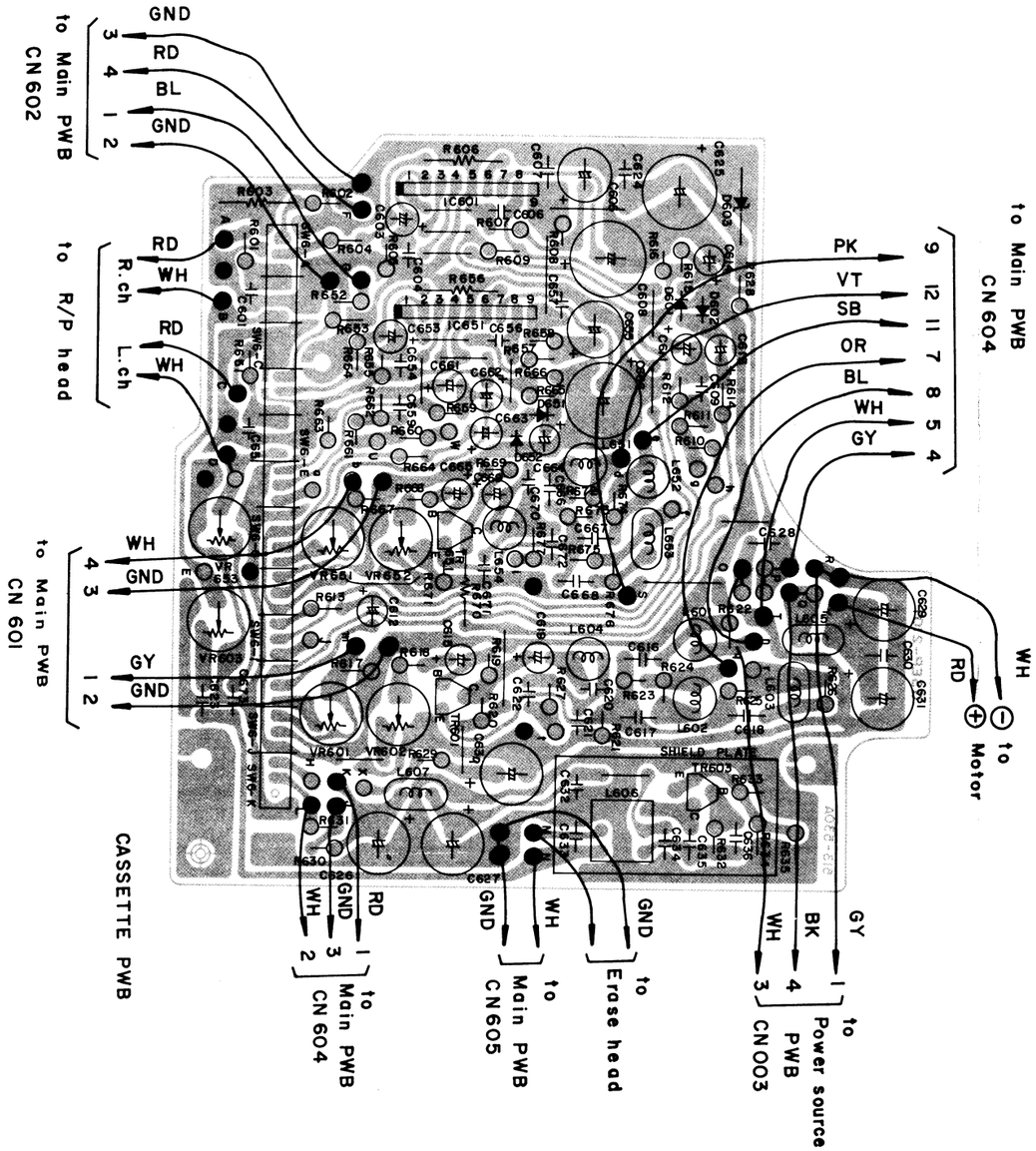
WIRING CONNECTION II

1. PVC wire	2. Shield wire
4A-4B 1G-1N 1A-1G R-2V P-Q C141-2P 1T-4Y M-S L-T (only for TSR-645)	C211-D103 2Q-TR104(C) 1P.TQ-4e.4O 1R.1S-4I.4j

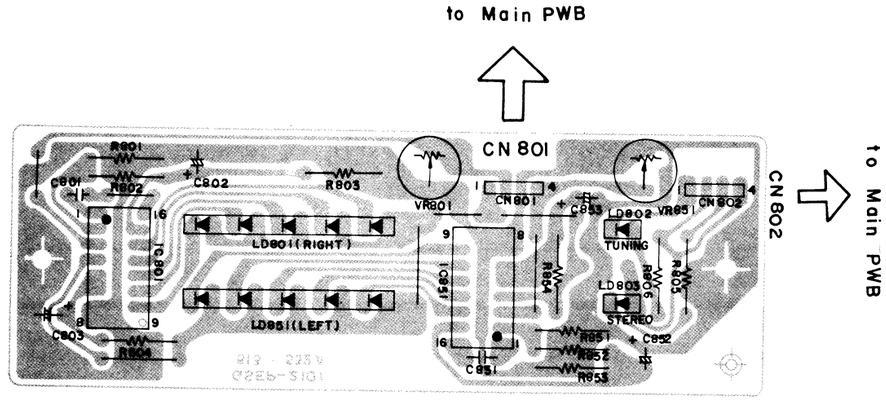
VARICON WIRING



PWB AY, CASSETTE (511-530A)

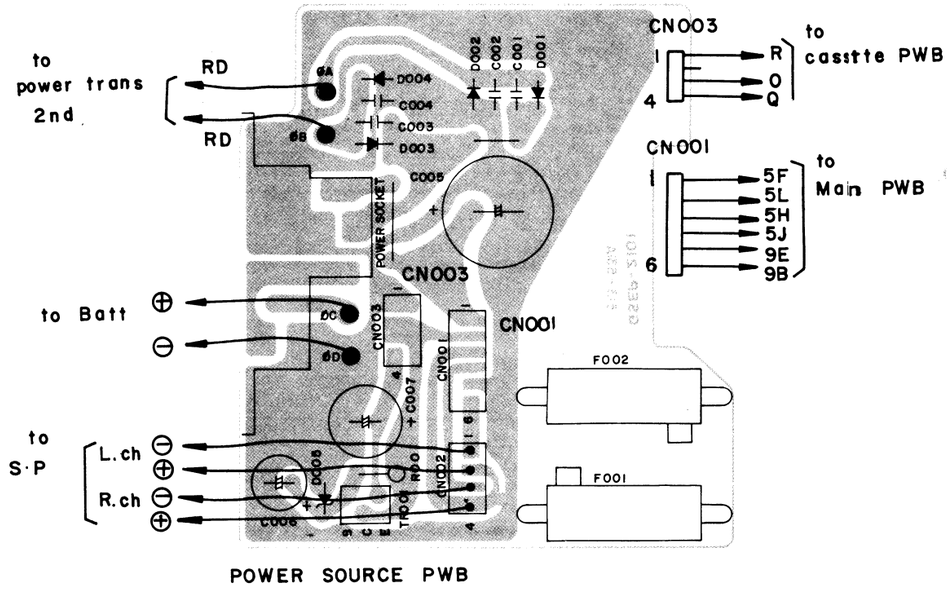


PWB AY, LED (511-532A)



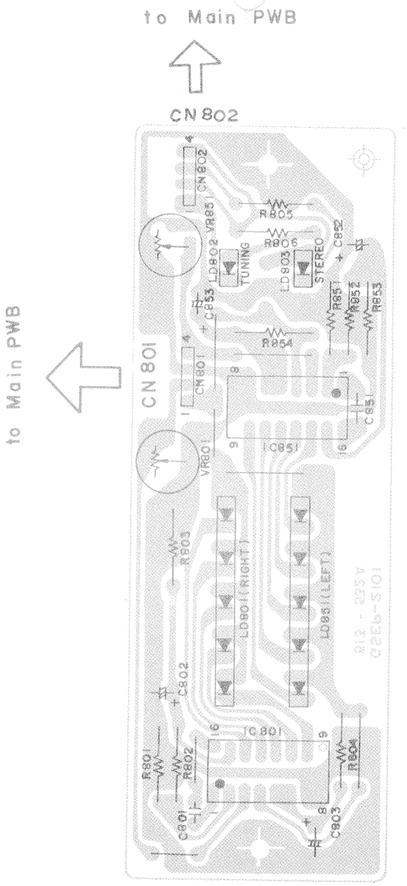
LEVEL PWB

PWB AY, POWER SOURCE (511-531A)

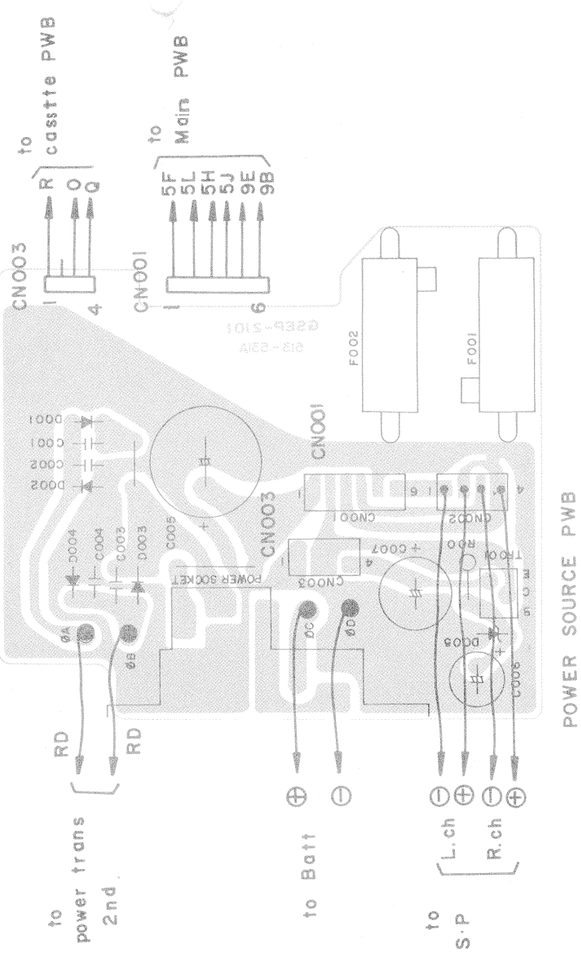


POWER SOURCE PWB

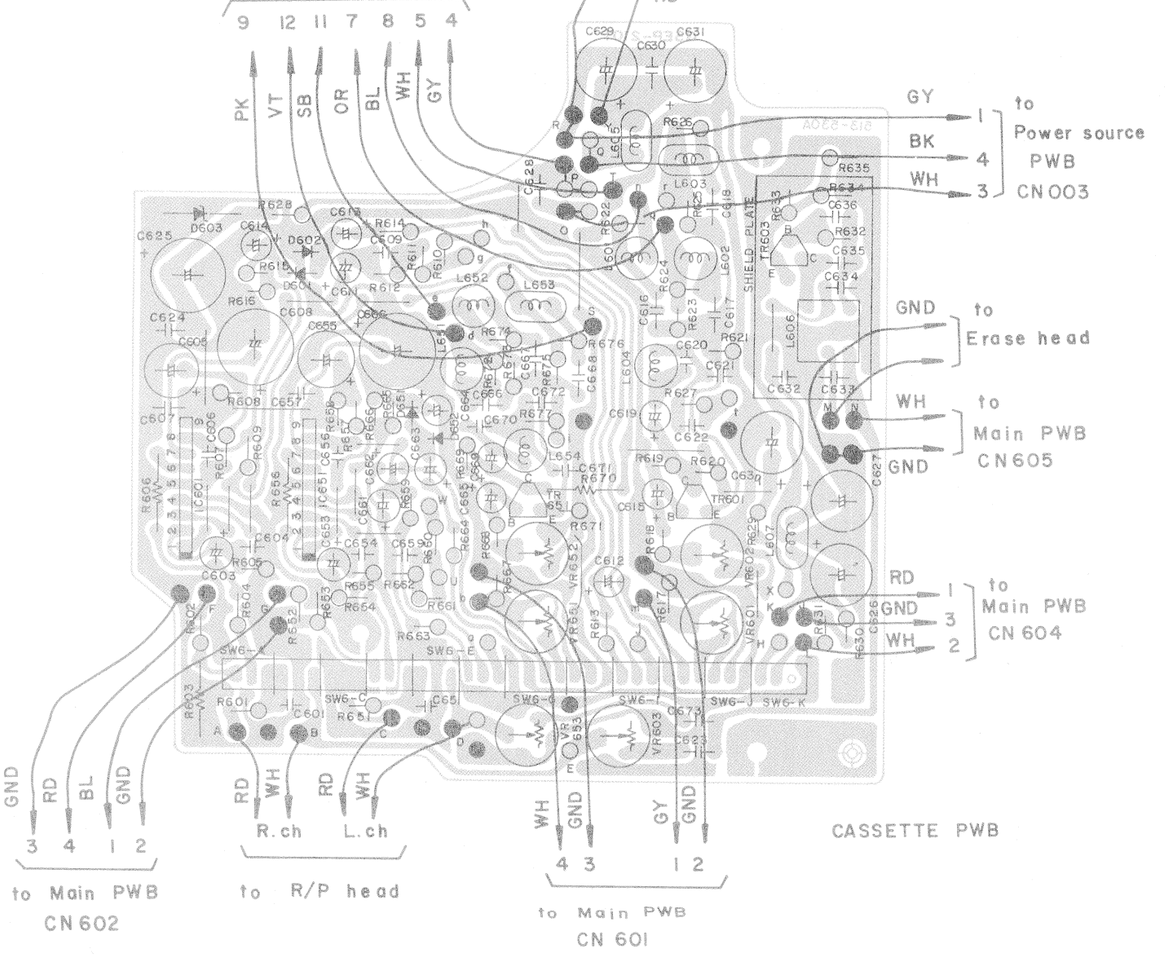
PWB AY, LED (511-532A)



PWB AY, POWER SOURCE (511-531A)



PWB AY, CASSETTE (511-530A)



ELECTRICAL PARTS LIST

The electrical parts list are used in common for model TSR-640 and TSR-645 except appendix I and II.

PWB AY, MAIN (511-529A)

NO.	SYMBOL NO.	PART NO.	DESCRIPTION	NO.	SYMBOL NO.	PART NO.	DESCRIPTION
1.	BAND	551-616A	SW, ROTARY SLIDE SRZ-L042	27	D201	652-015B	DIODE DETECT KES1555 TOSHIBA
2.		616-011A	FILTER, BAND PASS PFWB2	28	D1	654N418A	DIODE, AFC, TOSHIBA, IS2236
3.	CF201, 202	616-007A	FILTER, CERAMIC 8FE107MA8 RD	29	D202, 203	651-001D	DIODE DETECT 1S188FM-1
4.		616-009A	FILTER, NOTCH	30	D101, 102, 103,	651-001C	DIODE DETECT 1S188FM-2
5.	IC201 (MPX)	668N061A	AN7410 (MPX)		104		
6.	IC501, 551	668-150B	IC AUDIO LA4420	31	D204	654-017A	DIODE ZENER 1N750A
	(POWER IC)			32	L2	635N020E	COIL, RF, FM
7.	TR1	662N031B	TRANSISTOR, MOTOROLA, MPS9426B	33	L3	635N006A	COIL, RF, FM
8.	TR2,3	665-819A	TRANSISTOR KEC KTC1923-R	34	L4	635N003B	COIL, RF, FM
9.	TR201, 202, 203,	661N007D	TRANSISTOR, GOLDSTAR, GS9017H	35	L104	639N003L	COIL, PEAKING
	204, 102, 103, 104	661N007E	TRANSISTOR, GOLD STAR, GS9017I	36	L203	636N006D	COIL, CHOKE, 330MH
11	TR403, 453, 404,	661N004F	TRANSISTOR GOLDSTAR GS9014K	37	TC101, 103	623N023H	TRIMMER 20P
	454			38	TC102, 104	623N023B	TRIMMER 8P
12	TR401, 451, 402,	661N025A	TRANSISTOR GOLD STAR GS9024K	39	T1	644N018F	TRANS, IF, FM
	452, 405, 406			40	T201	647N008C	DISCRIMINATOR, FM
13	TR105	661N003D	TRANSISTOR GOLDSTAR GS9013I	41	T202	647N008D	DISCRIMINATOR, FM
14	POWER	556-611C	SW, LEVER	42	T101	644N019D	TRANS, IF, MW
15	MODE	556-611A	SW, LEVER SLR043	43	T102	644N019G	TRANS, IF, MW
16	FUNCTION,	556-611B	SW, LEVER SLR063	44	T103	644N019C	TRANS, IF, MW
	TAPE-SELECTOR			45	VR201	613-002F	VR, SEMI-FIXED SR19R-10KB
17	RIF	552-614A	SW, SLIDE KSA-2317	46		662N048A	VARICON P2Z-22BPT
18	MAIN VOLUME	611-630A	VR, GM80B-100CB-2, 15KQ	47	R108, 101	RD101J09	R, CARBON FILM 100-J 1/4WM
19	TREBLE	611-631A	VR, GM70R-100KA-2, 15KQ	48	R503, 553	RD391J09	R, CARBON FILM 390-J 1/4WM
20	BASS, MIX MIC	611-631B	VR, GM70R-100KB-2, 15KQ	49	R465, 433, 438	RD222J09	R, CARBON FILM 2.2K-J 1/4WM
21	BALANCE	611-632A	VR, VM10R-100KW 15DQ	50	R229	RD223J02	R, CARBON FILM 22K-J 1/4WR
22	LINE-IN/OUT	573-049A	SOCKET AY, RCA PWB	51	R114	RD270J04	R, CRABON FILM 27-J 1/2WR
23	MIC EXT-SP	572-042B	JACK, EAR, HSJ0785-01-050	52	R230, 440	RD181J03	RESISTOR 1/2WR 180
24	MIC-REMOTE	572-158A	JACK 3.5 ϕ (HSJ0718-01-010)	53	R10	RD681J02	R, CARBON FILM 680-J 1/4WM
25		572-034D	JACK PHONE	54	R437	RD561J09	R, CARBON FILM 560-J 1/4WM
26		573-051A	SOCKET AY, DIN				

NO.	SYMBOL NO.	PART NO.	DESCRIPTION	NO.	SYMBOL NO.	PART NO.	DESCRIPTION
55	R441, 409, 459	RD121J02	R, CARBON FILM 120-J 1/4WR	82	R207, 116, 426,	RD393J02	R, CARBON FILM 39K-J 1/4WR
56	R4, 104, 206, 13	RD101J02	R, CARBON FILM 100-J 1/4WR		476		
57	R901, 951, 418,	RD151J02	R, CARBON FILM 150-J 1/4WR	83	R222, 506, 556	RD473J01	R, CARBON FILM 47K-J 1/4WR
	468			84	R224, 225, 402,	RD153J02	R, CARBON FILM 15K-J 1/4WR
58	R214, 126, 502,	RD181J02	R, CARBON FILM 180-J 1/4WR		452		
	552			85	R201, 432, 9	RD683J02	R, CARBON FILM 68K-J 1/4WR
59	R203	RD221J02	R, CARBON-FILM 220-J 1/4WR	86	R11, 12	RD104J02	R, CARBON FILM 100K-J 1/4WR
60	R423, 473	RD271J02	R, CARBON FILM 270-J 1/4WR	87	R102	RD273J02	R, CARBON FILM 27K-J 1/4WR
61	R211, 118, 422	RD331J02	R, CARBON-FILM 330-J 1/4WR	88	R110, 431, 481	RD154J02	R, CARBON FILM 150K-J 164WR
	472			89	R430	RD184J02	R, CARBON FILM 180K-J 1/4WR
62	R109	RD391J02	R, CARBON-FILM 330-J 1/4WR	90	R2, 5	RD334J02	R, CARBON FILM 330K-J 1&4WR
63	R113	RD471J02	R, CARBON-FILM 470-J 1/4WR	91	R212, 123	RD274J02	R, CARBON FILM 270K-J 1/4WR
64	R3, 204, 213	RD561J02	R, CARBON FILM 560-J 1/4WR	92	R420, 470	RD684J02	R, CARBON FILM 680K-J 1/4WR
65	R119, 435, 436	RD561J02	R, CARBON FILM 560-J 1/4WR	93	R403, 453, 128	RD475J02	R, CARBON FILM 4.7MJ 1/4WR
66	R1, 129, 205, 215,	RD102J02	R, CARBON-FILM 1K-J 1/4WR	94	R401, 451	RD394J02	R, CARBON FILM 390K-J 1/4WR
	216, 217, 221			95	R407, 457, 416,	RD225J02	R, CARBON FILM 2.2M-J 1/4WR
67	R105, 111, 106,	RD102J02	R, CARBON-FILM 1K-J 1/4WR		466		
	429, 121, 127, 112			96	R107	RD330J02	R, CARGON FILM 33-J 1/4WR
68	R6, 419, 469, 427	RD122J02	R, CARBON FILM 1.2K-J 1/4WR	97	C14	CC020D01	C, CERAMIC CC2PF-D
69	R202, 210, 117	RD152J02	R, CARBON FILM 1.5K-J 1/4WR	98	C15	CC080D12	C, CERAMIC CC8PF
70	R441, 491	RD182J02	R, CARBON FILM 1.8K-1/4WM	99	C5, 11, 142	CC050D01	C, CERAMIC CC 5PF-D
71	R406, 434, 456,	RD222J02	R, CARBON FILM 2.2K-J 1/4WR	100	C16	CC060D01	C, CERAMIC CC 6PF-D SL 50V
	415			101	C103, 123	CC120J01	C, CERAMIC CC 12PF-J SL 50V
72	R115, 405, 455	RD272J02	R, CARBON-FILM 2.7K-J 1/4WR	102	C12	CC180K01	C, CERAMIC CC18PF-K SL 50V
73	R226, 227	RD332J02	R, CARBON FILM 3.3K-J 1/4WR	103	C6	CC200J12	C, CERAMIC CC20PF-J TH 50V
74	R412, 462	RD392J02	R, CARBON FILM 3.9K-J 1/4WR	104	C13	CC470K01	C, CERAMIC CC 47PF-K 3L 50V
75	R8	RD472J02	R, CARBON-FILM 4.7K-J 1/4WR	105	C420, 211	CC101K01	C, CERAMIC CC 100PF-K SL 50V
76	R411, 461	RD822J02	R, CARBON-FILM 8.2K-J 1/4WR	106	C212	CC151K01	C, CERAMIC CC 150PF-K
77	R122, 404, 454,	RD682J02	R, CARBON FILM 6.8K-J 1/4WR	107	C209, 210	CC221K01	C, CERAMIC CC 220PF-K SL 50L
	125			108	C8, 503, 553	CC331K01	C, CERAMIC CC 330PF-K
78	R7, 218, 219, 408	RD103J02	R, CARBON FILM 10K-J 1/4WR	109	C4	CK102Z02	C, CERAMIC CK 1000PF-Z 50V
	120, 458, 417, 467			110	C2, 3, 10, 111,	CK103Z02	C, CERAMIC CK0.01MF-Z 50V
79	R421, 471, 103,	RD103J02	R, CARBON FILM 10K-J 1/4WR		129, 206		
	474, 413, 463			111	C7, 203, 413, 463	CK103Z02	C, CERAMIC CK 0.01MF-2 50V
80	R124, 223, 501,	RD123J02	12KJ 1/4WR CARBON FILM	112	C201, 202, 9, 205,	CK223Z02	C, CERAMIC CK 0.022MF-Z 50V
	551, 504, 554				207, 214, 106		
81	R209, 220	RD183J02	R, CARBON FILM 18K-J 1/4WR				

NO.	SYMBOL NO.	PART NO.	DESCRIPTION
113	C112, 113, 119, 127, 130, 131, 109	CK223Z02	C, CERAMIC CK 0.022MF-Z 50V
114	C117, 638, 407, 457	CQ102M01	C, POLYESTER 0.001MF-M 50V
115	C637	CQ332M01	C, POLYESTER 0.0033MF-M 50V
116	C140	CQ682M01	C, POLYESTER 0.0068MF 50V
117	C220, 221	CQ152M01	C, POLYESTER 0.0015 MF-M 50V
118	C508, 558, 137	CQ103M01	C, POLYESTER 0.01MF 50V
119	C140, 141, 105, 135	CQ103M01	C, POLYESTER 0.01MF-M 50V
120	C406, 456	CQ154M01	C, POLYESTER 0.15MF 50V
121	C110, 132, 133, 405, 455, 510, 560	CQ223M01	C, POLYESTER 0.023MF-M 50V
122	C215, 134, 417, 467	CQ473M01	C, POLYESTER 0.047MF-M 50V
123	C506, 556, 501, 551	CQ224M01	C, POLYESTER 0.22MF-M 50V
124	C139, 408, 458	CQ153M01	C, POLYESTER 0.015MF-M 50V
125	C107	CY152J01	C, POLYSTYROL 1500PF-JR
126	C216	CY471J01	C, POLYSTYROL 470PF-JR
127	C507, 557	CE336B01	C, ELECTROLYTIC 33 MF-10V
128	C414, 464, 509, 559	CE104F01	C, ELECTROLYTIC 0.1MF 50V
129	C401, 451, 402, 452, 403, 453, 404	CE105F01	C, ELECTROLYTIC 1MF 50V
130	C454, 411, 461, 412, 462	CE105F01	C, ELECTROLYTIC 1MF 50V
131	C416, 466, 419, 423	CE105F01	C, ELECTROLYTIC 1MF 50V
132	C424	CE106C01	C, EELCTROLYTIC 10MF-16V
133	C118, 504, 554	CE107B01	C, ELECTROLYTIC 100MF-10V
134	C505, 555	CE108B01	C, ELECTROLYTIC 100MF 10V
135	C425, 426, 511, 428	CE108C01	C, ELECTROLYTIC 1000MF 16V
136	C217, 222, 223	CE224F01	C, ELECTROLYTIC 0.22MF 50V
137	C126, 136	CE225F01	C, ELECTROLYTIC 2.2MF-50V
138	C114, 108	CE227B01	C, ELECTROLYTIC 220MF 10V
139	C427, 430	CE227C01	C, ELECTROLYTIC 220MF 16V
140	C429	CE477C01	C, ELECTROLTYIC 470MF 16V
141	C213, 218, 219, 17	CE474F01	C, ELECTROLYTIC 0.47MF 50V
142	C208	CE475C01	C, ELECTROLYTIC 4.7MF-16V
143	C502, 552	CE337B01	C, ELECTROLYTIC 330MF 10V
144	C513	CE228C01	C, ELECTROLYTIC 2200MF 16V
145	C561	CE338C01	C, ELECTROLYTIC 3300MF 16V
146	C228	CE477B01	C, ELECTROLYTIC 470MF 10V
147	C901, 951	CE475F06	C, ELECTROLYTIC 4.7MF-50V BP
148	4P	671-211H	FLAT WIRE, 4P
149	MIC (CON-DENSER) 4PIN	563-1401	CONNECTOR AY JST(4P) UL
150	CN001(6PIN)	563-1410	CONNECTOR AY, JST (6P) UL
151	12PIN	564-018G	PLUG, MULTI PRONG (12P)
152	6PIN	564-018A	PLUG, MULTI PRONG
153	4PIN	564-018C	PLUG, MULTI PRONG
154	FM ANT	563-139A	CONNECTOR, 2P
155		362N056A	LUG, GND

PWB AY, CASSETTE (511-530A)

NO.	SYMBOL NO.	PART NO.	DESCRIPTION
1	IC601, 651	667-605A	IC, TA7137P-ST (PRE AMP, ALC)
2	TR601, 651	661N004G	TRANSISTOR GOLDSTAR GS9014L
3	TR603	665-886D	TRANSISTOR, GOLD STAR, GS9023J
4	SW601	552-601A	SW, SLIDE CL 112B
5	VR601, 651	613-002G	VR, SEMI-FIXED SR 19R-47KB 10D
6	VR602, 652	613-002J	VR, SEMI-FIXED SR19R-100KB
7	VR603, 653	613-002E	VR, SMEI-FIXED SR 19R-150KB 10
8	L601, 651, 602, 652	639-602F	COIL PEAKING 6.6MH
9	L604, 654	637N005B	COIL PEAKING 33MH
10	L605, 607	639N003I	COIL PEAKING 4.7MH
11	L606	634N036C	COIL OSC TAPE RECORDER 10
12	R633, 634, 635	RD100J04	R, CARBON FILM 10-J 1/2WR
13	R606, 656	RD121J09	R, CARBON FILM 120-J 1/4WM
14	R670	RD102J09	R, CARBON FILM 1K-J 1/4WM
15	R617, 667	RD393J02	R, CARBON FILM 39K J1/4WR
16	R601, 651	RD100J01	R, CARBON FILM 10-J 1/4WR
17	R631	RD180J02	R, CARBON FILM 18-J 1/4WR
18	R630	RD470J02	R, CARBON FILM 47-J 1/4W
19	R615, 665	RD101J02	R, CARBON FILM 100-J 1/4WR
20	R628	RD221J02	R, CARBON FILM 220-J 1/4WR
21	R620, 621, 671, 624, 674	RD102J02	R, CARBON FILM 1K-J 1/414WR
22	R604, 654, 618, 668, 622, 672	RD152J02	R, CARBON FILM 1.5K-J 1/4WR
23	R614, 664	RD222J02	R, CARBON FILM 2.2K-J /4WR
24	R623, 673	RD272J02	R, CARBON FILM 2.7K-J 1/4WR
25	R602, 652	RD183J02	R, CARBON FILM 18K-J 1/4WR
26	R627, 677	RD392J02	R, CARBON FILM 3.9K-J 1/4WR
27	R608, 658	RD472J02	R, CARBON FILM 4.7K-J 1/4WR
28	R617, 667, 613, 663	RD103J02	R, CARBON FILM 10K-J 1/4WR
29	R607, 657, 632	RD123J02	12KJ1/4WR CARBON FILM
30	R613, 663	RD333J02	R, CARBON FILM 33K-J 1/4WR
31	R612, 662	RD684J02	R, CARBON FILM 680K-J 1/4WR
32	R605, 655, 609 659	RD184J02	R, CARBON FILM 180K-J 1/4WR
33	R619, 669	RD474J02	R, CARBON FILM 470K-J 1/4WR
34	R616, 666	RD475J02	R, CARBON FILM 4.7M J 1/4WR
35	R611, 661	RD682J02	R, CARBON FILM 6.8K-J 1/4WR
36	R629	RD121J02	R, CARBON FILM 120-J 1/4WR
37	C606, 656	CC470K01	C, CERAMIC CC 47PF-K SL 50V
38	C620, 670	CC201K01	C, CERAMIC CC 200PF-K SL 50V
39	C640	CY332J03	C, POLYESTYROL 0.0033MF-JR 125V
40	C601, 651, 623, 673	CK102Z02	C, CERAMIC CK 1000PF-Z 50V
41	C607, 657, 634, 624	CK223Z02	C, CERAMIC CK 0.022MF-Z 50V
42	C628, 630	CK473Z02	C, CERAMIC CK 0.047MF-Z 50V
43	C622, 672, 638	CQ102M01	C, POLYESTER 0.001MF-M 50V
44	C636	CQ472M01	C, POLYESTER 0.0047MF-M 50V
45	C633	CQ103M01	C, POLYESTER 0.01MF–M 50V
46	C635	CQ223M01	C, POLYESTER 0.022MF-M 50V
47	C616, 666	CQ333M01	C, POLYESTER 0.033MF-M 50V
48	C609, 659	CQ153M01	C, POLYESTER 0.015MF-M 50V
49	C617, 667	CQ393M01	C, POLYESTER 0.039MF M50V
50	C611, 661, 613, 663, 615, 665	CE105F01	C, ELECTROLYTIC 1MF 50V

NO.	SYMBOL NO.	PART NO.	DESCRIPTION	NO.	SYMBOL NO.	PART NO.	DESCRIPTION
51	C612, 662, 614, 664, 619, 669	CE106C01	C, ELECTROLYTIC 10MF-16V	59	TO MAIN PWB 12PIN	563-143A	CONNECTOR 'AY' 12P
52	C626, 627	CE107B01	C, ELECTROLYTIC 100MF-10V	60	C625	CE108B01	C, ELECTROLYTIC 1000MF 10V
53	C639	CE477C01	C, ELECTROLYTIC 470MF 16V	61	TO MAIN PWB, 4PIN	563-140G	CONNECTOR AY.
54	C605, 655, 629, 631	CE227B01	C, ELECTROLYTIC 220MF 10V	62	TO MAIN PWB, 4PIN	563-140H	CONNECTOR AY,
55	C603, 653	CE475C01	C, ELECTROLYTIC 4.7MF-16V				
56	C608, 658	CE477B01	C, ELECTROLYTIC 470MF 10V	63	D601, 651, 602, 652	651-001C	DIODE DETECT 1S188FM-2
57	TO RIF SWITCH	563-139E	CONNECTOR AY, 2P				
58	CN003(4PIN) TO POWER SOURCE	563-140F	CONNECTOR AY, 4P	64	D603	654N214A	DIODE, ZENER HZ6A

PWB AY, LED (511-532A)

NO.	SYMBOL NO.	PART NO.	DESCRIPTION	NO.	SYMBOL NO.	PART NO.	DESCRIPTION
1	IC801, 851	668-132A	IC LB1405 (LED DRIVER)	8	C803, 853	CE105F01	C, ELECTROLYTIC 1MF 50V
2	LD801, 851	653-108A	LED, TOSHIBA, TLR-205, RD	9	C802, 852	CE475C01	C, ELECTROLYTIC 4.7MF-16V
3	LD802, 803	653-618A	LED, TOSHIBA, TLR-205 RD	10	C801, 851	CC470K01	C, CERAMIC CC 47PF-K SL 50V
4	R804, 854	RD561J09	R, CARBON FILM 560-J 1/4WM	11	R805 (STEREO)	RD222J09	R, CARBON FILM 2.2K-J 1/4WM
5	R801, 851	RD392J09	R, CARBON FILM 3.9K-J 1/4WM	12	R805 (TUNING)	RD272J09	R, CARBON FILM 2.7K-J 1/4WM
6	R803, 853	RD183J09	R, CARBON FILM 18K-J 1/4WM	13	VR801, 851	613-002G	VR, SEMI-FIXED SR19R-47KB 10D
7	R802, 852	RD104J09	R, CARBON FILM 100K-J 1/4WM				

PWB AY, POWER SOURCE (511-531A)

NO.	SYMBOL NO.	PART NO.	DESCRIPTION	NO.	SYMBOL NO.	PART NO.	DESCRIPTION
1		573N066A	SOCKET 2P (220V WITH DC JACK)	9	R001	RD561J02	R, CARBON FILM 560-J 1/4WR
2	TR001	661N027A	TRANSISTOR GOLD STAR GS-2013H	10	CN002 (4PIN) TO SPEAKER	563-140E	CONNECTOR AY, 4P
3	D001, 002, 003, 004	652N005A	IC4001	11	4PIN	564-018C	PLUG (MULTI-PRONG)
4	D005	654-225B	DIODE ZENER 1N6000B	12	6PIN	564-018A	PLUG, MULTI PRONG
5	C001, 002, 003, 004	CK223Z02	C, CERAMIC CK 0.022MF-Z 50V	13		585N007J	FUSE,
				14		585-224C	FUSE 5x20 KS 250V 0.6A NR
6	C005	CE338D01	C, ELECTRO 3300MF-25V	15		586-113A	FUSE HOLDER OPEN TYPE
7	C007	CE477B01	C, ELECTROLYTIC 470MF 10V	16		556N017H	SWITCH VOLTAGE SELECTOR
8	C006	CE277B01	C, electrolytic 220MF 10V				

Appendix I (for MODEL TSR-640)

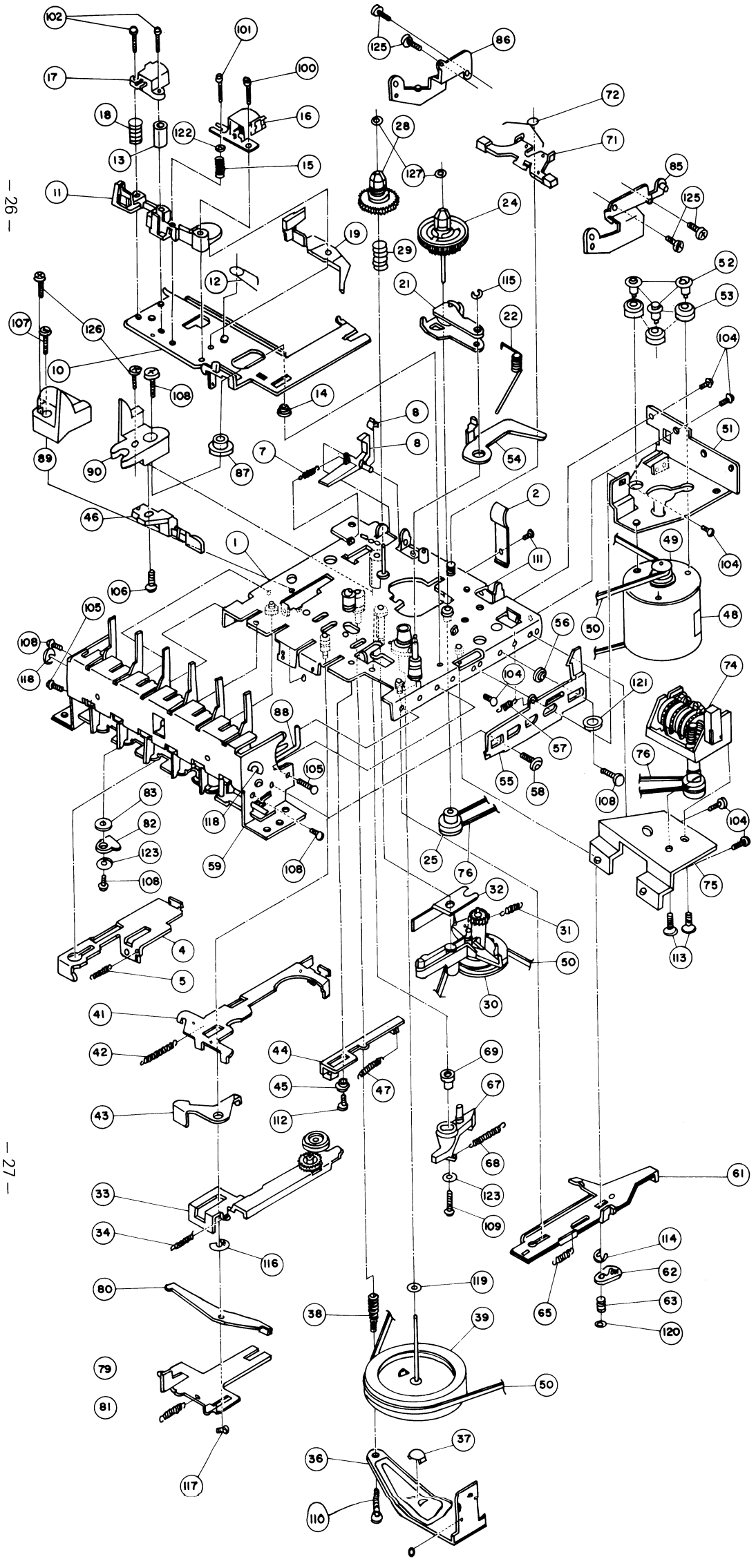
NO.	SYMBOL NO.	PART NO.	DESCRIPTION
1	L102	632-602D	MW/LW ANT COIL
2	L103	634N020F	SW ANT COIL
3	L105	634N037F	LW OSC COIL
4	L106	634N015C	MW OSC COIL
5	L107	634N020E	SW OSC COIL
6	C102	CC300K01	C, CERAMIC CC 30PF-K
7	C103, 124	CC050D01	C, CERAMIC CC 5 PF-D
8	C115	CQ223M01	C, POLYESTER 0.022MF-M
9	C116	CQ103M01	C, POLYESTER 0.01 MF-M
10	C120	CY101J01	C, POLYSTYROL 100 PF-J
11	C121	CY201J01	C, POLYSTYROL 200PF-J
12	C122	CY331J01	C, POLYSTYROL 330 PF-J
13	C123	CC080K01	C, CERAMIC CC 8 PF-K
14	C125	CY392J01	C, POLYSTYROL 3900 PF-J

Appendix II (For Model TSR-645)

NO.	SYMBOL NO.	PART NO.	DESCRIPTION
1	L102	632N040D	MW/SW1 ANT COIL
2	L103	634N020D	SW2 ANT COIL
3	L105	634N015C	MW OSC COIL
4	L106	634N020B	SW1 OSC COIL
5	L107	634N020C	SW2 OSC COIL
6	C 102	CC080D01	C, CERAMIC CC 8 PF–D
7	C115	CQ103M01	C, POLYESTER 0.01 MF-M
8	C116	CQ472M01	C, POLYESTER 0.0047MF-M
9	C120	CC180 K01	C, CERAMIC CC 18 PF-K
10	C121	CY331J01	C, POLYSTYROL 330 PF-J
11	C122	CY152J01	C, POLYSTYROL 1500 PF-J
12	C123	CC050D01	C, CERAMIC CC 5 PF-D
13	C125	CY103J01	C, POLYSTYROL 0.01 MF-J

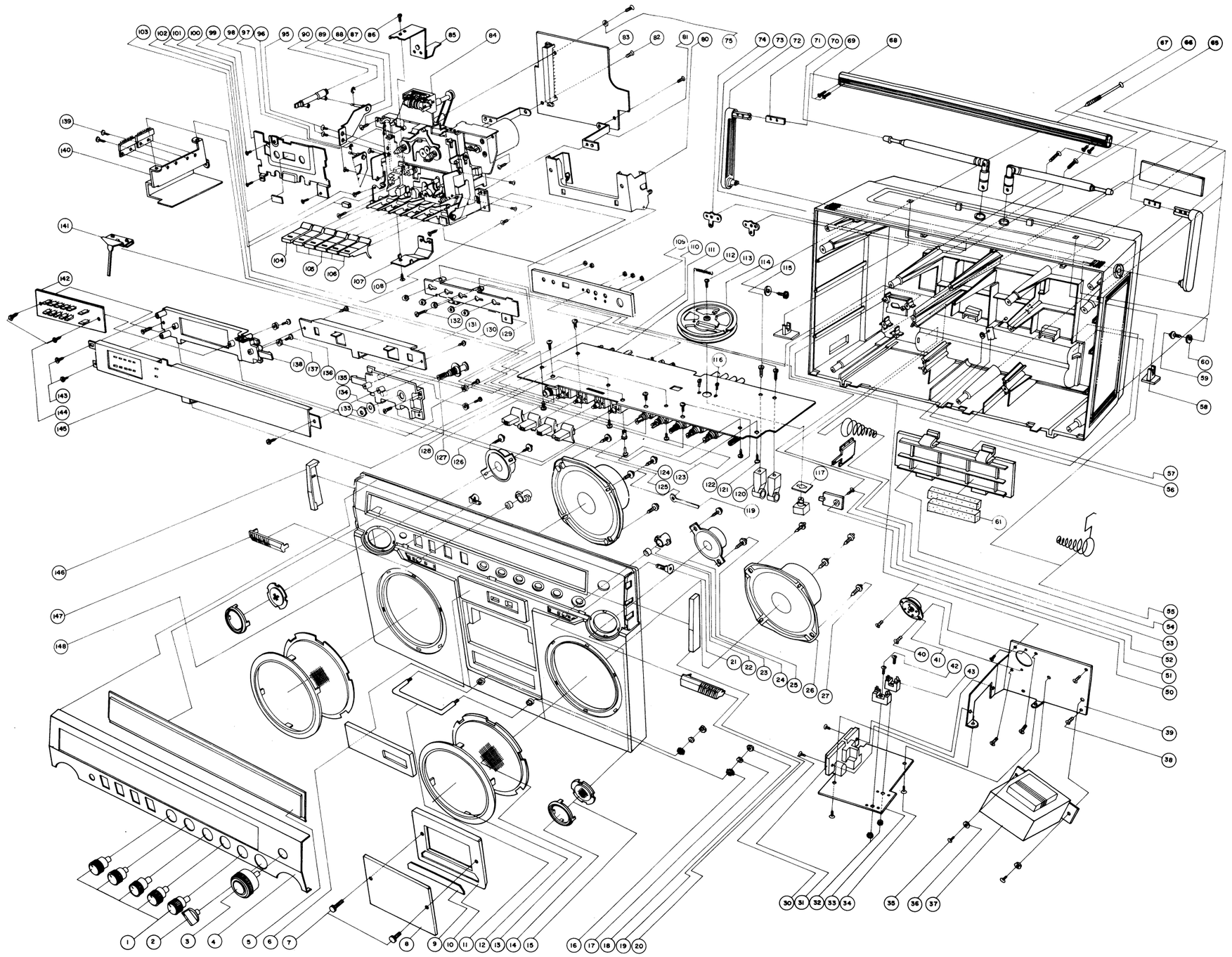
DECK MECHANISM EXPLODED VIEW & PARTS LIST

TN-57 CN-225

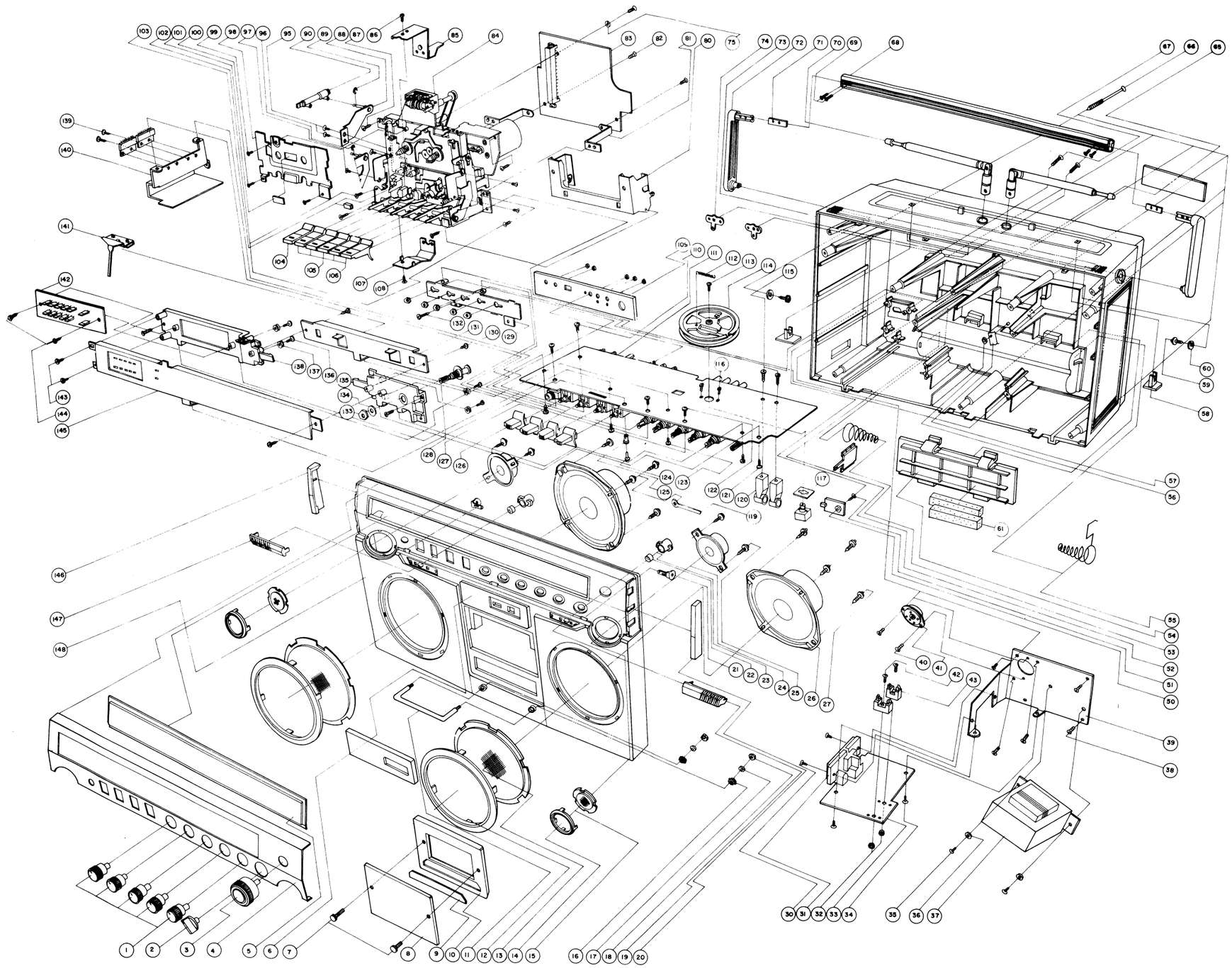


NO.	DESCRIPTION	PART NO.
1	CHASSIS	1696 01 81
2	PACK SPRING	1247 01 02
3		
4	RECORD SLIDE LEVER	1260 02 01
5	SPRING	18 05 02B
6	RECORD SAFETY LEVER	910 03 01
7	SPRING	1260 02 02
8	RECORD SAFETY LEVER STOPPER	268 05 15
9		
10	HEAD PANEL ASS'Y	1560 03 81
11	HEAD BLOCK	1307 03 03
12	SPRING	1560 03 03
13	COLLER	1304 02
14	COLLER	408 04 11
15	SPRING	1560 03 05
16	R/P HEAD	HN-424951
17	ERASE HEAD	HF-213260
18	SPRING	1560 03 05
19	SENSING PLATE ASS'Y	1200 11 93
20		
21	PINCH ROLLER ASS'Y	1260 04 91
22	SPRING	1260 04 02
23		
24	TAKE-UP REEL ASS'Y	1610 05 91
25	DRIBE PULLEY	16 15 04
26		
27		
28	SUPPLY REEL ASS'Y	1610 06 92
29	SPRING	1328 06 01
30	RF CLUTCH ASS'Y	1200 07 91
31	SPRING	1200 07 09
32	REW SPRING	1202 10 01
33	F.F. IDLER ARM ASS'Y	1200 08 91
34	SPRING	1260 08 01
35		
36	FLYWHEEL HOLDER	1260 09 01
37	FLYWHEEL BEARING	1200 09 08
38	SPRING	1200 09 05
39	FLYWHEEL CAPSTAN	1200 09 03
40		
41	MAIN PLATE	1200 10 01
42	SPRING	1260 10 07
43	REWIND ARM	1200 10 02
44	PLAY SLIDE LEVER	1260 10 13
45	COLLER	09 03 02
46	LEAF SWITCH MSW-0038NBK	
47	SPRING	1560 10 03
48	MOTOR FG-510ED-96	
49	MOTOR PULLEY	973 12 02M
50	MAIN BELT	1260 12 02
51	MOTOR BRACKET	1260 12 01
52	COLLER SCREW(S)	1200 12 01
53	MOTOR RUBBER	588 09 10
54		
55	EJECT SLIDE LEVER	1260 13 01
56	COLLER	763 07 06
57	SPRING	268 12 01
58	COLLER SCREW E	1260 15 03
59	PUSH BUTTON ASS'Y	1451 14 92
60		
61	PUSH SLIDE LEVER ASS'Y	1260 17 81
62	PAUSE LEVER	1222 17 02
63	SPRING	1222 17 03
64	ARM LEVER	1222 17 05
65	SPRING	1260 17 02
66		
67	AUTO-STOP LEVER	1260 11 01
68	SPRING	132 03 03
69	COLLER	1260 11 02
70		
71	BLAKE ARM ASS'Y	1260 19 91
72	SPRING	1260 19 02
73		
74	COUNTER MP-392-033	
75	COUNTER BRACKET	1735 18 01
76	COUNTER BELT	393 12 02
77		
78		
79	RC SLIDE LEVER	1677 19 01
80	RC LEVER	1227 19 01
81	SPRING	269 17 01
82	STOPPER(B)	408 03 05
83	COLLER	1294 19 02
84		
85	CASE ARM(R) ASS'Y	1401 25 87
86	CASE ARM(L) ASS'Y	1401 25 88
87	COLLER	1507 10 04
88	SPRING	1401 25 08
89	GUIDE (L)	1507 10 01
90	GUIDE (R)	1507 10 02
100	CAP SCREW(+ –) 2x11	
101	SCREW (+ –) 2x11	
102	CAP SCREW (+ –) 2x12	
103		
104	TAPPING SCREW 26x4	
105	TAPPING SCREW 26x5	
106	TAPPING SCREW (BIND) 2.6x5	
107	TAPPING SCREW 2x8	
108	TAPPING SCREW 2.6x8	
109	TAPPINS SCREW 2.6x12	
110	SCREW 2.6x12	
111	TAPPING SCREW 2.6x4	
112	TAPPING SCREW 2.6x6	
113	F.H SCREW 3x6	
114	E RING 1.5	
115	E RING 2.5	
116	E RING 4	
117	E RING 2.3	
118	E RING 3.2	
119	NYLON WASHER 2.2x7x0.5	408 11 20
120	NYLON WASHER 1.7x5x0.4	
121	8 WASHER 2.6x10x0.8	
122	WASHER 2.1x5x0.4	1560 15 01
123	WASHER 2.6x8x0.5	706 15 01
124		
125	SCREW 2x4 BLACK	
126	F.H TAPPING SCREW BLACK 2x4	
127	NYLON WASHER 1.6x3.8x0.3	1610 06 04
128		

EXPLODED VIEW FOR CABINET



EXPLODED VIEW FOR CABINET



PARTS LIST FOR CABINET EXPLODED VIEW

This parts list is only apply to Gold star standard. As a result, if set under service is not Gold star standard, the parts No's are subject to modification.

NO.	PART NO.	DESCRIPTION	NO.	PART NO.	DESCRIPTION
1	273-101A	KNOB, CONTROL	27	353-052C	SCREW, SPECIAL (3x10)
2	273-102A	KNOB SELECTOR	28		
3	271-101A	KNOB, TUNING	29		
4	251-615A	PLATE, FRONT (TSR-640 CHAMPAGNE GOLD)	30	MCC1836J	SCREW + MCC 3x8
	251-615C	PLATE, FRONT (TSR-645 CHAMPAGNE GOLD)	31	573N066A	2P SOCKET
	251-615E	PLATE, FRONT (TSR-640 SILVER)		573N064B	2P SOCKET (FOR UL, CSA)
5	236-142A	WINDOW	32	NHA 1800J	NUT M3
6	251-614D	PLATE NAME (SILVER)	33	511-531A	POWER PWB AY
	251-614E	PLATE NAME (CHAMPAGNE GOLD)	34	MRC 1830J	SCREW 3x6
7	353-040D	SCREW, SPECIAL (AL)	35	MRC2236J	SCREW 4x8
8	236-143A	WINDOW , CST	36	WSB2200J	C, WASHER
9	246-212A	DECO, CST DOOR (CHAMPAGNE GOLD)	37	641-664C	POWER TRANS (220V)
	246-212B	DECO, CST DOOR (SILVER)		641-664E	POWER TRANS (110/220V)
10	226-032A	DOOR, DECO (CHAMPAGNE GOLD)	38	353N025G	SCREW SPECIAL
	226-032B	DOOR, DECO (SILVER)	39	321-714A	TRANS BRACKET
11	275N679A	BUTTON GUARD	40	MRC1830J	SCREW MRC 3x6
12	224-003A	GRILL, SP (A)	41	556N017H	VOLTAGE SEL S/W
13	365-003B	METAL, SP (A)	42	MRC1839J	SCREW M3x10
14	224-004A	GRILL, SP (B)	43	586-113A	HOLDER FUSE
15	365-004A	METAL, SP (B)	44		
17	WSB 2200J	WASHER SPRING	45		
18	NHA2200J	NUT M4	46		
19	246-210B	DECO, MIC	47		
20	246-211A	DECO, FRONT	48		
21	562N056A	LUG, GND	49		
22	542N023A	MIC CONDENSER	50	221N410A	COVER, VOL. SELECTOR (DOUBLE VOLTAGE)
23	341-612A	BUSHING MIC		221N410C	COVER, VOL. SELECTOR (CHAMPAGNE GOLD)
24	541-139A	SPEAKER (TWEETER)		221N410D	COVER, VOL. SELECTOR (SILVER)
25	353-052J	SCREW, SPECIAL (3x8)	51	353N025G	SCREW +3x10
26	541-141A	SPEAKER (WOOFER)	52	563N126A	TERMINAL, BATT

NO.	PART NO.	DESCRIPTION	NO.	PART NO.	DESCRIPTION
53	442N137C	SPRING, BATT	86	MRC1530J	SCREW 2.6x6
54	221-415A	COVER BATT (CHAMPAGNE GOLD)	87	353N025G	SCREW, SPECIAL
	221-415C	COVER BATT (SILVER)	88	321-484A	BRACKET AY, DAMPER
55	442N138C	SPRING, BATT	89	WEO0500P	E-RING D1.5
56	WPL1800H	WASHER, PLAIN	90	444-002A	AIR DAMPER
57	455N004E	RIBBON, BATT	91		
58	324N030B	HOLDER, ROD ANT (CHAMPAGNE GOLD)	92		
	324N030C	HOLDER, ROD ANT (SILVER)	93		
59	353-052C	SCREW, SPECIAL	94		
60	354N071A	WASHER	95	353N022C	SCREW, SPECIAL
61	447N056B	BATT CUSHION	96	WEO0900P	E-RING (D 2.0)
62			97	MRC0922I	SCREW 2.0x4
63			98	251-613A	PLATE, DECK DECO
64			99	MBC1522I	SCREW 2.6x4
65	243-456A	LABEL, MAIN	100	TRQ0922I	SCREW 2.0x4
66	353-067C	SCREW, SPEC	101	256N261C	PLAT, REFLECTION
67	MPC1847K	SCREW MPC 3x22	102	MBC1830J	SCREW 3x6
68	261 N089C	HANDLE	103	477-014A	RUBBER SHOCK PROOF
69	MCC1541L	SCREW 2.6x12	104	273-319B	DECK KNOB (REC)
70	532N035E	ROD ANT	105	273-319C	DECK KNOB (PLAY)
71	321-720A	BRACKET, HANDLE	106	273-319A	DECK KNOB
72	261-004A	HOLDER HANDLE	107	384-619A	GUIDE, RECORDING
73	217-287A	CASE, REAR (CHAMPAGNE GOLD)	108	TRQ1830J	SCREW 3x6
	217-287B	CASE, REAR (SILVER)	109	235-002A	JACK BOARD, DIN (CHAMPAGNE)
74	562N055A	LUG		235-002B	JACK BOARD, RCA
75	WSB2200J	SPRING WASHER		235-002C	JACK BOARD DIN (SILVER)
76			110	353N025F	SPECIAL SCREW
77			111	511-529A	MAIN PWB AY
78			112	442-004X	SPRING
79			113	MPC1536J	SCREW 2.6x8
80	226-033A	DOOR AY, CST	114	432N038A	WHEEL, MAIN
81	321-713A	BRACKET, DECK PWB	115	353N025K	SPECIAL SCREW
82	MRC1830J	(BRACKET, DECK PWB) SCREW MRC 3x6	116	MCC1530J	SCREW
			117	477N011A	BUSHING
83	511-530A	CST PWB AY	118		
84	412-048A	DECK, CST	119	328N008A	BAND LEAD
85	333-627A	LEVER RECORDING			

NO.	PART NO.	DESCRIPTION	NO.	PART NO.	DESCRIPTION
120	324N374A	HOLDER ANT	136	423N254A	ROLLER SHAFT
121	353N025F	SPECIAL SCREW	137	434N031A	ROLLER
122	MRC1830J	SCREW 3x6	138	313-195A	CHASSIS PWB (A)
123	MRC1830J	SCREW 3x6	139	353N025F	SCREW SPECIAL
124	356N008A	PIN, INSERT	140	255-080A	HEATSINK PLATE
125	341N041A	PIN BUSHING	141	361-007B	POINTER AY
126	273-316B	LEVER KNOB	142	511-532A	LED PWB AY
127	353N025F	SCREW, SPECIAL	143	353N025F	SPECIAL SCREW
128	421N081B	TUN, SHAFT	144	353N025F	SPECIAL SCREW
129	324-638A	VOL. HOLDER	145	252-615A	PLATE, SCALE (TSR-640 CHAMPAGNE)
130	353N025F	SCREW, SPECIAL		252-615C	PLATE, SCALE (TSR-645)
131	384-007A	GUIDE POINTER		252-615D	PLATE, SCALE (TSR-640 SILVER)
132	353N025H	SPECIAL SCREW	146	246-211B	DECO, FRONT
133	352N027H	NUT M10	147	246-210A	DECO, MIC
134	354-601C	WASHER	148	217-286B	CASE, FRONT (CHAMPAGNE GOLD)
135	313-196A	CHASSIS PWB (B)		217-286D	CASE, FRONT (SILVER)